THE IRON TRADE REVIEW

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Much Cutting of Prices of Finished Material

But Concessions Not Greater Than For Some Time— Basic Situation in the East Firmer—Structural Contracts

Price cutting on finished material, especially in eastern territory, has attracted more attention during the past week, but concessions do not seem to be any larger than for some time. Salesmen who have recently visited the west and southwest report favorable prospects for the fall trade, and say that the crop situation is very much better than was indicated by the government report for Aug. 1.

Pig Iron

Judging from the promptness with which iron and coke are being received by many foundries on contract, the melt is increasing, but new business is light and prices do not advance. The Standard Sanitary Mfg. Co. purchased about 7,000 tons of foundry grades for fourth quarter delivery. A portion of the tonnage was No. 3 at 25 cents under the No. 2 price, which was $14.15, Allegheny. In the east, a consumer of basic has appeared in the market for 10,000 tons, and a Coatesville company, which has been inquiring for from 25,000 to 30,000 tons for first quarter, has not been able to buy, as makers are slow to quote for such shipment. On the whole, the basic situation in the east is stronger, and it seems probable that $15, delivered, will soon represent the market. In the Pittsburgh district, the basic market is very quiet, and furnaces generally are quoting $13.25, valley. Some basic can still be obtained at $13. Shipments of basic from the valleys are now greater than production. Recent advances in southern quotations made by most of the Alabama furnaces have had a tendency to check buying. Some $10 pig iron is still available in the Birmingham district. Recent efforts to break the $37 price for future delivery of ferromanganese have failed, although that quotation is shaded 50 cents, for immediate shipment.

Structural Material

The principal structural material contract of the week was 14,000 tons for the Kansas City terminal, awarded by the general contractor to the American Bridge Co., which, it is said, also has taken the contract for 5,300 tons for the Northwestern Life Insurance building, Milwaukee. The city of Chicago has awarded 1,100 tons for the Washington street bridge to the Stroble Steel Construction Co. Levering & Gerrigues have the contract for 2,000 tons for an addition to the Ritz-Carleton hotel, New York City. Milliken Bros. will fabricate 6,000 tons for the Bamberger store, Newark, N. J., under a sub-contract from the Bethlehem Steel Co. The Thompson-Starrett Co. has the general contract for the Field Museum, Chicago, and is calling for bids on the 10,000 tons of structural material required. Some very low prices are still being made on fabricating.

Railroad Buying

In the east, the railroads are more prominent in inquiring and contracting for structural material. The New York Central has awarded 5,000 tons to the American Bridge Co. for terminal work in New York City. The Boston & Maine is in the market for 5,000 tons additional for bridge work. It is expected that nearly all of the 70,000 tons of plates and shapes, which will be required for the Erie cars awarded last week, will be rolled by the Pittsburgh mills. The Tennessee and Colorado mills are well supplied with rail orders for this year. Exports have materially helped the former company.

Pipe

The United States Cast Iron Pipe & Foundry Co. has been awarded 3,000 tons of pipe for private work at Boston. The Warren Foundry & Machine Co., Phillipsburg, N. J., has been awarded 1,800 tons by New Bedford, Mass. The National Tube Co. has taken a contract for 60 miles of 10-inch gas pipe for Ohio delivery. Jobbers are still specifying from hand to mouth on merchant pipe contracts. The demand for boiler tubes is far below the capacity of the mills and prices are irregular.

Coke and Old Material

Very few sales of coke have been made, but the market is somewhat firmer, owing to recent heavy shipments. About 1,500 ovens have recently been blown in in the Connellsville region, and there has been some difficulty in getting enough men to do the work. The scrap market at Pittsburgh is firm, but in other centers there is a softening tendency.

WORLD'S IRON MARKETS

PITTSBURGH

Volume of Business More Satisfactory Than Prices.

Office of THE IRON TRADE REVIEW,
2148-49 Oliver Bldg., Aug. 22.

The market on finished steel products has been spotty during the past week, steel mills finding the mails fairly good one day and bad the next. The total volume of business booked has hardly been up to the average of July, but on account of the heavy bookings late in July, the mills have been able to maintain the heavier pace of production already inaugurated. Production this week is at practically the same gait as last week. The relatively light bookings do not cause any uneasiness to the steel mills, because it is recognized that this is the height of the vacation season and a resumption of buying on a more liberal scale is confidently expected for next month. A more serious feature of the situation is the fact that the heavier operation of the steel mills has not produced any firming up in prices, and steel mills appear to be just as ready to shade prices now as they were two or three weeks ago. The cutting, however, is no deeper than it was at any point. Steel mills absolutely refuse to be stampeded by reports of low prices and refuse to meet any alleged cuts unless it is absolutely proved that the price has actually been quoted. No cut prices are being made for forward delivery, but for prompt delivery nearly all the business is going at 1.20c, Pittsburgh, for bars and 1.30c, Pittsburgh, for plates. There has been very little shading in prices on plain shapes, but there is no question that many contracts for fabricated material have been taken in the past few weeks at prices which would net a loss to the fabricator, if based upon the full mill prices for the plain material. It is understood that through the aggressive selling of the past few weeks, some of the fabricating shops are very well filled up, and have lately revised their views, so that in the future they will quote considerably higher prices on fabricated material and the competition will, therefore, be reduced. The 4,000 cars contracted for last week by the Erie railroad will involve between 60,000 and 75,000 tons of plates and shapes, as there are 2,000 all steel gondolas, 1,000 all steel hoppers and 1,000 steel underframed box cars. Nearly all the steel will be rolled by Pittsburgh mills. There remain inquiries in the market for over 10,000 cars, and it is thought that the placing of these orders by the Erie will start some of the other eastern roads to place car orders, as it is well known that most of them have a good many vacant numbers in their car series. The western roads show very little disposition to buy, as they are considerably disturbed over the last government crop report. The steel mills expect the next report to be much more favorable.

Pig Iron.—The Standard Sanitary Mfg. Co. late last week bought about 7,000 tons of foundry grades for delivery over the fourth quarter for its Allegheny and New Brighton, Pa., plants, paying on the basis of $14.15, delivered, Allegheny, and $14.05, delivered, New Brighton, for No. 2. A portion of the tonnage was No. 3 at 25 cents under the No. 2 price, and another portion was gray forge 0.05 and under in sulphur at 15 cents under the price of No. 3. As reported a week ago, this company bought 2,000 tons of southern iron for its Louisville plant at $10, Birmingham. There is some inquiry for foundry iron for next year's delivery, but the furnaces will not sell for delivery beyond Jan. 1, excepting at a considerable advance over the current market price of $13.50, furnace. Selling of odd lots of foundry iron for early delivery continues at the regular price. The basic pig iron market has been very quiet since the recent purchase of the Colonial Steel Co. The furnaces generally are quoting $13.25, but some basic can still be picked up at $13. There are rumors that a steel interest has made an exchange deal whereby it will receive a round tonnage of Bessemer iron, but this has not been confirmed. Shipments of basic iron from the valley furnaces are much in excess of the current production, as only two merchant furnaces in the valleys are making basic iron, two others being on Bessemer, while one is on gray forge and the remaining on foundry. Stocks of Bessemer iron are also decreasing in the valleys on account of heavier shipments to steel works and ingot mold foundries. The latter are very busy and are behind in their orders. We quote the market as follows:

(Prompt Shipment.)

Bessemer, valley	$15.00
Bessemer, Pittsburgh	15.90
Basic, valley	13.00
Basic, Pittsburgh	13.90
No. 2 foundry, Pittsburgh	14.40
Gray forge, Pittsburgh	13.90
Malleable, Pitsburgh	14.15

(Third Quarter.)

Bessemer, valley	$15.00
Bessemer, Pittsburgh	15.90
Basic, valley	13.00
Basic, Pittsburgh	13.90
No. 2 foundry, Pittsburgh	14.40
Gray forge, Pittsburgh	13.90
Malleable, Pitsburgh	14.15

Ferro Alloys.—The Sharon interest which was inquiring for 400 tons of ferro-manganese for delivery after Jan. 1, has closed for the tonnage at the regular price of $37, Baltimore, which is the market for any delivery next year. Odd carloads for prompt shipment have been sold at $36.50, Baltimore, but the regular producers quote $37, Baltimore, for this delivery also.

We quote ferro-manganese at $36.50 to $37, Baltimore, for prompt shipment, and at $37, Baltimore, for forward delivery. The freight rate from Baltimore to Pittsburgh is $1.95 per ton.

Fifty per cent ferro-silicon is quoted at $53 to $55, Pittsburgh, for prompt and forward delivery; 12 per cent, $25; 11 per cent, $24; 10 per cent, $23, f. o. b. Jisco and Ashland furnaces. The freight rate to Pittsburgh is $1.90. The foreign grades are held at $1 or more a ton over domestic prices.

Plates.—Buying of plates continues to be of a strictly hand to mouth character. While the mills would not accept less than 1.35c, Pittsburgh, for forward delivery, there is no interest in forward delivery business and nearly all prompt business has been taken at 1.30c, Pittsburgh, or a very small fraction less. The mills are somewhat surprised at the steadiness of

the market, in that the shading of $1 a ton is so general and that there is very little shading beyond this amount. On account of the business booked lately, the plate mills are easily able this week to maintain their former rolling schedule. We quote the market as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches, 1.30c to 1.35c. Extras are as follows, per 100 pounds: Boiler and flange steel plates, 0.10c; A. B. M. and ordinary firebox steel plates, 0.20c; steel bottom steel, 0.20c; marine steel, 0.40c; locomotive firebox steel, 0.50c; all sketches excepting straight taper plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches, 0.10c; circles, 0.20c. Plates in widths over 100 inches up to 110 inches, 0.05c; over 110 inches up to 115 inches, 0.10c; over 115 inches up to 120 inches, 0.15c; over 120 inches up to 125 inches, 0.25c; over 125 inches up to 130 inches, 0.50c; over 130 inches, 1c. Gages under ½ inch to and including 3-16 inch plate on thin edge, 0.10c; under 3-16 and including No. 9, 0.25c. Five cents extra for less than carloads. Terms net cash in 30 days.

Sheets.—Some close observers insist that they see evidences of a turn in the tide in the sheet market, in that some large consumers have come into the market in the past week for large tonnages for extended deliveries whereas heretofore their buying has been exclusively from hand to mouth. For instance, one large consumer in Ohio has put out an inquiry for its total requirements over the next 12 months, aggregating 4,000 tons of one pass cold rolled. The shading of $1 a ton from the nominal prices announced at the beginning of June is fairly general, while in Ohio and Chicago territory an extra $1 a ton is sometimes conceded on the most desirable specifications. Among the independents, about 60 per cent of the sheet mills are running, while the American Sheet & Tin Plate Co. is operating about 70 per cent of its sheet mills, a considerable part of its business continuing to be for export. It is understood that its new sheet and jobbing mills at Gary, Ind., will soon be put in regular operation, but no definite statement on this subject is available. We quote the market as follows:

Blue annealed sheets No. 10 gage 1.45c to 1.50c; black annealed sheets No. 28 gage, 1.95c to 2c; galvanized sheets No. 28 gage, 2.95c to 3c; painted roofing sheets, $1.35 to $1.40 per square for No. 28 gage, 2½-inch corrugation; galvanized roofing sheets, $2.50 to $2.55 per square for No. 28 gage, 2½-inch corrugation f. o. b. Pittsburgh.

Tin Plate.—Specifications against tin plate contracts continue fairly good, but new buying is light as it usually is at this season of the year. There are occasional reports of shading to the extent of 10 cents per box on prompt deliveries. About 75 per cent of the independent tin mills are in operation and about 80 per cent of the American Sheet & Tin Plate Co.'s tin mills. This company is supplying the bulk of the Standard Oil Co.'s requirements in rebate plates for this half year, while for the first half of this year it had the entire requirements. The export business in tin plate continues very satisfactory. We quote the market as follows:

Coke tin plate, 10-pound basis, 14 x 20, $3.70 f. o. b. mill, Pittsburgh district.

Rails and Track Material.—The Edgar Thomson rail plant is running on a better schedule this month than for some time past, there being fairly large specifications on domestic contracts, while the export orders are better than usual. New bookings in the domestic market have been light during the past week. Very little new business has been taken in spikes and track supplies, as the railroads are fairly well covered by existing contracts. We quote the market as follows, the base price on open-hearth steel rails being 1.34c per pound at the mill:

Fifty-pound and heavier, 1.25c per pound; carloads and less than 500 tons, 1.34c per pound; light rails on base weight of 40 to 45 pounds, 1.16c, the schedule on the other weights being irregular and subject to negotiations; angle splice bars for standard sections, 1.50c, Pittsburgh; track bolts, 2.25c, Pittsburgh.

RAILROAD SPIKES.

4½, 5 and 5½ x ⅝	$1.50
3, 3½, 4, 4½ and 5 x ½	.10
3½, 4 and 4½ x 7/16	.20
3, 3½, 4 and 4½ x ⅜	.30
2½ x ⅜	.40
2½, 3 and 3½ x 7/16	.60
2 x ⅞	.80

Steel.—Reports from the west that sheet bars have been sold at $2 a ton under the regular figure cannot be confirmed. Open market sales have been very light, as consumers are well covered by existing contracts, upon which no adjustment has been made. Specifications against billet and sheet bar contracts for August have been about the same as for July. Steel mill operations are as heavy as at the last report, the principal mills in the Pittsburgh district and the valleys operating at practically full capacity. We quote the market as follows:

Bessemer 4 x 4 billets with 0.25 carbon and less are quoted at $21, with the usual extras for size and analysis, and open-hearth rolling billets, $21. Bessemer sheet and tin bars are quoted at $22, and open-hearth sheet bars are quoted at $22, f. o. b. Pittsburgh or Youngstown, with full freight to destination added. Forging billets are quoted at $26, Pittsburgh.

Hoops and Bands.—Specifications against regular contracts for hoops continue to improve and the situation is regarded as fully up to normal. The requirements for cooperage stock exceed the average of the past few years and the hoop mills expect to be running at almost full capacity in September. Hoop prices are being well maintained on the regular schedule. We quote the market as follows:

Hoops in carload lots, 1.40c, Pittsburgh; in less than carload lots, 1.50c; bands, 1.20c to 1.25c base, with net extras, as per standard steel.

Merchant Bars.—New buying of steel bars is very spotty, jobbers and consumers placing orders only for their pressing requirements. The jobbers are running along with very light stocks and show no disposition to increase them. While the mills are adhering to 1.25c, Pittsburg, for forward delivery, there is practically none of such business being placed. A number of consumers who have contracts already placed are endeavoring to break the market on forward delivery business in order to secure a readjustment of their prices, but thus far have not been able to accomplish their purpose, the cut price of 1.20c, Pittsburgh, being named only for prompt delivery. Demand for iron bars continues to be of only moderate proportions. We quote the market as follows:

Common iron bars, 1.30c, Pittsburgh; Bessemer and open-hearth steel bars, 1.20c to 1.25c; plow and cultivator, 1.25c; channels, angles, zees, tees, under 3-inch, 1.35c, all f. o. b. mill. The following differentials are maintained on steel. Less than 2,000 pounds of a size, 0.35c advance. Cold rolled and ground shafting, 60 per cent off in carloads and 55 per cent in less than carloads, delivered in base territory.

Muck Bar.—The market on muck bar continues quiet. Prices are maintained as formerly at $28.50 to $29, delivered Pittsburgh, for prime grades, with an extra for all pig iron muck bar.

Structural.—Most of the structural shops are now working full time with business on their books sufficient to keep them going at this gait for several months. The low prices which have lately been ruling are held open for several jobs which are now being figured upon, but it is stated that on new jobs coming up the shops will quote higher prices, on account of their being comfortably filled up. We quote the market as follows:

Beams and channels, 15 inches and under, 1.35c; over 15 inches, 1.45c; zees, 1.35c; tees, 1.40c; angles, from 3 to 6 inches, 1.35c; over 6 inches, 1.45c; universal and sheared plates, 6¼ inches wide and wider, 1.35c.

Merchant Pipe.—Jobbers continue to specify from hand to mouth on merchant pipe contracts, and as they

have been bare of stocks for a long time these specifications make up a fairly satisfactory tonnage. One large line pipe contract was scheduled to be let yesterday afternoon, but latest advices today were that it had not yet been closed, otherwise the line pipe situation is quiet. We quote the following official discounts in carload lots, subject to the usual preferential discount to the larger buyers, merchant pipe, where specified, being offered in from ⅛ to 6 inches:

IRON AND STEEL PIPE BASING PRICES.

	Steel.		Iron.	
	Butt weld.			
	Black.	Galv.	Black.	Galv.
⅛, ¼, ⅜ inch.....	72	58	68	54
½ inch	75	63	71	59
¾ to 1½ inch.....	79	69	75	65
2 to 3 inches	80	70	76	66
	Lap weld.			
2 inches	76	66	72	62
2½ to 4 inches.....	78	68	74	64
4½ to 6 inches.....	77	67	73	63
7 to 12 inches.....	75	59	71	55
Extra Strong, Plain Ends.				
	Butt weld.			
⅜, ¼, ⅜ inch	69	59	65	55
½ inch	74	68	70	64
¾ to 1½ inch.....	78	72	74	68
2 to 3 inches.....	79	73	75	69
Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	75	69	71	65
2½ to 4 inches.....	77	71	73	67
4½ to 6 inches.....	76	70	72	66
7 to 8 inches.....	69	59	65	55
9 to 12 inches.....	64	54	60	50
Double Extra Strong, Plain Ends.				
	Butt weld.			
½ inch	64	58	60	54
¾ to 1½ inch	67	61	63	57
2 to 3 inches.....	69	63	65	59
Double Extra Strong, Plain Ends.				
	Lap weld.			
2 inches	65	59	61	55
2½ to 4 inches.....	67	61	63	57
4½ to 6 inches.....	66	60	62	56
7 to 8 inches.....	59	49	55	45

Plugged and reamed pipe is furnished at 2 points higher price, either butt or lap weld.

Boiler Tubes.—Demand for boiler tubes continues light and far below the capacity of the mills. Prices are very irregular and are down practically to the cost of production. We quote the following official discounts on steel boiler tubes in carload lots to jobbers:

1¼ to 2¼ inch	65
2½ inch	67½
2¾ to 3¼ inch.....	70
3½ to 4½ inch.....	72½
5 and 6 inch.....	65
7 to 13 inch	62½

To destination east of the Mississippi river will be sold at delivered discount for carloads lowered by 2 points, for lengths 22 feet and under; longer lengths, f. o. b. Pittsburgh. Usual extras to jobbers and boiler manufacturers.

Wire Products.—Buying of nails and other wire products continues to be only for current requirements, as jobbers have not yet started to buy extensively for the fall trade. Occasional irregularities in prices are reported, but in general the regular schedule is being well maintained. We quote the market as follows:

Wire nails, jobbers' carload lots, $1.70; retailers' carload lots, $1.75; cut nails (western makers), jobbers' carload lots, $1.60; painted barb wire, jobbers' carload lots, $1.70; retailers' carload lots, $1.80, with 30c for galvanizing; plain wire to jobbers in carloads, $1.50, and to dealers, in carloads, $1.55; polished staples, $1.70; galvanized staples, $2.

Wire Rods.—Deliveries of wire rods on regular contracts make a slightly better showing this month than in July. The market is very quiet as regards fresh sales. We quote $27, Pittsburgh, on Bessemer and open-hearth wire rods.

Coke.—While there have been no important transactions in the past week, the coke market has been somewhat stiffer on account of heavier shipments, particularly on contracts with steel works furnaces. It is reported this week that there is not a car of demurrage coke on the market and only a limited tonnage could be bought for immediate shipment, on which nothing below $1.55, ovens, could be done, while in one or two instances in the past week as high as $1.60, ovens, has been paid. Several contracts which were under negotiation for furnace coke for delivery over the last four months of the year are still held in obeyance, but may be closed within the next week or two. The labor situation in the Connellsville region has grown somewhat more acute. In the past fortnight, about 1,500 ovens have been blown in and while no great amount of difficulty has been experienced in getting men for them, other plants have been somewhat crippled because men have gone back to the plants at which they were in the habit of working. The most serious difficulty has been to find men for forking box cars, but this difficulty is always experienced in hot weather. We quote standard Connellsville furnace coke for prompt shipment at 5 cents higher than last week at $1.55 to $1.60, ovens, and for delivery over the last four months of the year at from $1.65 to $1.70, ovens. On high grade Connellsville foundry coke, we quote from $1.85 to $1.95, ovens, for prompt shipment and from $2 to $2.40, ovens, for forward delivery. The Connellsville *Courier's* figures for the week ending Aug. 12 show 25,823 active ovens with an output of 304,044 tons, as compared with 24,377 active ovens and a production of 290,767 tons the previous week.

Old Material.—On Wednesday of last week, an embargo was placed on shipments of scrap to the principal consumer at Monessen, Pa., and at about the same time an important consumer down the Ohio river gave instructions to all dealers to curtail shipments. Despite these two influences, there has been no surplus of steel melting grades of scrap and the market is fully as firm as it was. A few odd lots of heavy melting steel have been sold to consumers at $13.50, delivered, and this price can be done on any round tonnage. Producers continue to hold back material and the floating supply in the hands of dealers is relatively limited. Cast borings have been rather scarce and we quote them this week at from $9.25 to $9.50, against $9 to $9.50 last week. We quote, gross tons, delivered in the Pittsburgh district, including Monessen, Sharon, Steubenville, Brackenridge and Follansbee, as follows:

Heavy melting scrap.....	$13.25 to 13.50
Rerolling rails	13.50 to 14.00
Bundled sheet scrap.....	11.50 to 12.00
Iron axles	23.50 to 24.00
Old iron rails.....	15.50 to 16.00
Stove plate	10.00 to 10.50
No. 1 wrought scrap.....	13.50 to 14.00
Old car wheels.....	12.75 to 13.00
Low phosphorus	16.00 to 16.50
Machine shop turnings.....	9.50 to 10.00
Cast borings	9.25 to 9.50
No. 1 cast scrap.....	13.00 to 13.50
Malleable	12.50 to 13.00

CHICAGO

Good Prospects for Fall Business—Large Contracts to be Awarded.

Office of THE IRON TRADE REVIEW,
1328 Monadnock Block, Aug. 22.

Salesmen for the steel companies who have been out through the west and southwest report that prospects are favorable for a good fall trade from general consumers. The crop situation is very much better at the present time than was indicated by the misleading government report for Aug. 1, which was compiled at a time when conditions were at the worst. Since that time, the weather has been very favorable and it is believed that corn will make a good yield. Locally the demand for structural steel leads the market. Several large lettings are in prospect in the near future, including the Field Museum, a large new building for the Continental and Commercial bank, and a large addition to the Boston Department Store. Building permits have been issued for the two last mentioned projects. Announcements are also coming out regarding a new Union depot, which indicate that progress is being made on this project. In merchant lines, the trade is quiet. The wire interests report bookings this month equal to the average at this season for prompt or early shipment, but jobbers hesitate about placing contracts for fall delivery until business conditions are more settled. There is not much tonnage in the general demand for bars, but the mills are getting good specifications on their agricultural contracts for prompt and October shipment. Business men are generally puzzled at the recent disturbance in the financial world and are disposed

to move cautiously on forward contracts until the situation clears up.

Pig Iron.—The best indication in the pig iron market is that the melt is increasing in foundries in this territory. This is shown by larger deliveries of coke. There are not so many foundries asking to hold back shipments on their coke contracts and there is a better current demand. Iron men who have been out in the trade the past week report that many jobbing foundries which were running only two or three heats a week are now running their cupolas every day. The local northern furnaces find a little improvement in the current demand for foundry iron. Several sales of malleable Bessemer have been made running into first quarter. The total tonnage placed is not large. In one or two cases of sales for first quarter, a higher price has been obtained, but where the contracts carry iron for the remainder of this year, as well as first quarter, the present market price has governed. Southern iron is very quiet. Inquiries for any delivery are few in number and represent only a small tonnage. There is still enough iron available for prompt shipment at $10.00 to supply the spot demand, but $10.25 is the minimum for the remainder of the year for any standard iron. Three Alabama interests are now asking $11.00 and a fourth is reported out of the market at present prices. Other southern interests ask $10.50 for last quarter. Southern furnaces are known to have sold a very large tonnage in the past six weeks, but not much of it can be traced in this market. The regular price of Jackson county silveries remains unchanged, but on any desirable tonnage the market is shaded 50 cents. The following prices represent the market for Chicago delivery, except northern foundry No. 2 and malleable Bessemer, local furnaces, which are quoted f. o. b. furnace:

(Shipment this year.)

Lake Superior charcoal	$17.00
Northern foundry No. 2	14.50
Southern foundry No. 2	14.35
Southern silveries, 5 per cent silicon	16.35
Jackson Co. silveries, 8 per cent	18.40
Malleable Bessemer	14.50
Alabama basic	14.60

Billets.—The forging shops are running light and there are only occasional inquiries for carload lots of forging billets. The price situation remains unchanged. We quote as follows f. o. b. Chicago: Open-hearth forging billets, $26 to $27; re-rolling billets, $23.60.

Merchant Bars.—The mills holding agricultural contracts are getting good specifications for prompt and September shipment, and this holds true of contracts for special sections for this trade. The current demand for merchant bars is somewhat irregular, running good for a few days and then dropping off. Last week for a few days the market firmed up to 1.25c, but is weaker today on any desirable business. Concessions are available on any attractive orders for shafting, although the regular discount remains unchanged. Bar iron is running about the same with the mills endeavoring to hold 1.25c. Hard steel bars are somewhat irregular.

We quote, Chicago delivery, as follows:

Bar iron, 1.20c to 1.25c; hard steel bars, re-rolled, 1.20c to 1.25c; soft steel bars and bands and small shapes, 1.38c to 1.43c, base; hoops, 1.63c to 1.68c; smooth finished machinery steel, 1 inch and larger, 1.83c. Shafting 60 per cent off list for carload lots, 55 per cent off for less.

On iron and steel from local stock, we quote, as follows:

Bar iron, 1.80c to 1.90c per pound base; soft steel bars, 1.65c to 1.75c per pound base; soft steel hoops, 1.80c to 1.90c, full extras.

Structural Material.—This continues the best branch of the trade in finished materials. The mills are getting good orders for prompt shipment and prices on standard sections are firm. The following awards are reported for the past week: City of Chicago, Washington street bridge, 1,100 tons, to Stroble Steel Construction Co.; Gambrinus Brewing Co., structural steel for new mill brew machine, boiler and wash house, Portland, Ore., 191 tons, to A. Bolter's Sons, Chicago; San Francisco Council of Knights of Columbus, lodge building, San Francisco, 444 tons, to Central Iron Works, San Francisco; C., B. & Q. Ry. Co., freight house, St. Joseph, Mo., 199 tons, to Klemp-Simpson Co., Muncie, Ind.; Brunet Falls Mfg. Co., miscellaneous steel, Cornell, Wis., 588 tons, to Minneapolis Steel & Machine Co.; lion house for Lincoln park, Chicago, 176 tons, to Vierling Steel Works; C., M. & St. P. Ry. Co., two 90-foot standard half through turntables, 135 tons, to Wisconsin Bridge Co. The award is not officially announced for the new building of the Northwestern Life Insurance Co., at Milwaukee, but it is understood this contract went to the American Bridge Co.

We quote structural material, f. o. b. Chicago, as follows:

Beams and channels, 15 inches and under, 1.53c. For extras, see Pittsburgh report.

Plain material out of store is as follows:

All angles, 3 inches and larger, including 6 inches, $1.75 to $1.85 per 100 pounds; angles over 6 inches, $1.85 to $1.90 per 100 pounds, base; beams, 3 to 15 inches, inclusive, $1.75 per 100 pounds, base; channels, 3 inches and larger, $1.75 per 100 pounds, base.

Rails and Track Fastenings.—The mills have had quite a run this month of small orders for standard rails for prompt shipment. The maximum tonnage in one order last week was 2,500 tons, but several orders of this character were taken and similar inquiries are still pending. Track supply business is on a satisfactory basis in tonnage.

We quote, light rails, f. o. b. Chicago, and track fastenings, f. o. b. Joliet, as follows:

Light rails, carloads, 40 to 45-pound, 1.16c to 1.20½c; 30 to 35-pound, 1.19½c to 1.24c; 16, 20 and 25-pound, 1.20½c to 1.25c; 12-pound, 1.25c to 1.29½c.

Light section relayers, 45 pounds and under, subject to inspection, $21 to $23; standard section relaying rails, subject to inspection, $23.50 to $24.

Track fastenings, f. o. b. Joliet, angle bars, 1.50c to 1.60c; railroad spikes, 1.65c to 1.75c; smaller size spikes, 1.70c, base; track bolts with square nuts, 2.10c to 2.20c, base.

Plates.—The mills still have good rolling schedules, although not so full as the structural mills. Prices are not so well maintained, especially on narrow sizes.

We quote, mill prices, f. o. b. Chicago, as follows:

Tank plates, ¼ inch thick, 6¼ to 100 inches wide, 1.48c to 1.53c. For extras, see Pittsburgh report.

Store prices are as follows:

Tank steel, ¼ inch and heavier, up to 72 inches wide, 1.75c to 1.85c.

Sheets.—There is a fair volume of new business from week to week, but prices continue somewhat irregular. Concessions vary from 5c to 7½c, the lighter gages showing more irregularity.

For mill prices, see Pittsburgh report. Freight to Chicago, 18 cents.

We quote, store prices, f. o. b. Chicago, as follows:

Blue annealed, No. 10, 2.00c; No. 12, 2.05c. Box annealed, No. 28, 2.65c. Galvanized, No. 28, 3.55c.

Wire Products.—The wire mills are specifying a good tonnage of steel from the steel mills. The business being taken now for nails and barb wire is principally for prompt shipment, as jobbers hesitate about contracting for any large tonnage. There has been some discussion among the wire manufacturers of prospects for higher prices in September, but this will depend upon the volume of business that comes in during the next month and a general improvement in the business situation. Crop reports continue very favorable.

We quote, f. o. b. Chicago, as follows:

Wire nails, jobbers' carload lots, $1.88; retailers' carload lots, $1.93; retailers' less than carload lots, $2.03; painted barb wire, jobbers' carload lots, $1.88; retailers' carload lots,

$1.53; retailers', less than carload lots, $2.03, with 30c for galvanizing; plain wire to jobbers, $1.68; plain wire, retailers' carload lots, $1.73.

Merchant Pipe and Tubes.—A fair volume of business is moving. Hopes are entertained of a prompt settlement of the strike in Chicago, which has tied up all pipe work.

We quote, merchant pipe and tubes out of store, Chicago, as follows:

Iron and Steel Pipe Basing Prices.

	Steel. Black.	Steel. Galv.	Iron. Black.	Iron. Galv.
⅛-¼ inch	69.2	54.2	63.2	48.2
⅜ inch	72.2	59.2	66.2	53.2
2 in. to 3 in.	77.2	66.2	72.2	61.2
4½-6 inches	74.2	63.2	69.2	58.2
7-12 inches	71.2	54.2	67.2	50.2
Extra Strong Plain Ends.				
⅛ inch	70.2	63.2	54.2	52.2
2-3 inches	75.2	68.2	61.2	55.2
7-8 inches	65.2	....	59.2	47.2
Double Extra Strong.				
½ inch	58.2	50.2	....	....
2-3 inches	63.2	55.2	....	....
7-8 inches	53.2	41.2	....	....

Tubes.

	Lap weld steel. Per cent.	Charcoal iron. Per cent.	Shelby seamless. Per cent
1 inch	39	..	57½
1¼ to 2¼ inch	55	40	35
2¼ to 3¼ inch	62½	50	46

Cast Iron Pipe.—No large lettings were reported last week, but there was a fair run of second orders and routine business.

We quote, f. o. b. Chicago, as follows:

Four-inch water pipe, $25.25; 6 to 12 inches, $24.50, larger sizes, $24; gas pipe, $1 a ton higher.

Old Material.—The market has quieted down, reflecting conditions in the steel market. Trading is limited to scrap in transit, as no active demand is reported from consumers. Buyers of bar iron and steel are generally limiting their business to orders for prompt shipment, and this makes it unnecessary for the mills to show any interest in old material, as their stocks of scrap are ample to cover the tonnage of finished material on their books. Foundry scrap is slow.

We quote, for delivery in consumers' yards, Chicago, as follows:

GROSS TONS.

Old car wheels	$12.75 to 13.25
Old iron rails	14.50 to 15.00
Rerolling rails (5 ft. and over)	12.50 to 13.00
Old steel rails (3 ft. and under)	11.25 to 11.75
Frogs, switches and guards	10.75 to 11.25
Heavy melting steel	10.75 to 11.25
Shoveling steel	10.25 to 10.75

NET TONS.

No. 1 R. R. wrought	$11.00 to 11.50
No. 2 R. R. wrought	10.00 to 10.50
Arch bars and transoms	13.75 to 14.25
Knuckles, couplers and springs	10.00 to 10.50
Shafting	15.00 to 15.50
Iron car axles	18.00 to 18.50
Steel car axles	16.00 to 16.50
Locomotive tires	14.00 to 15.00
Dealers' forge	9.50 to 10.00
Pipes and flues	8.00 to 8.50
No. 1 cast	10.75 to 11.25
No. 1 busheling	8.75 to 9.25
No. 2 busheling	6.75 to 7.25
No. 1 boiler cut	7.50 to 8.00
Boiler punchings	12.50 to 13.00
Cast and mixed borings	5.50 to 6.00
Machine shop turnings	6.50 to 7.00
Railroad malleable	10.00 to 10.50
Agricultural malleable	9.25 to 9.75
Angle bars, splices, etc., iron	12.00 to 12.50
Angle bars, steel	10.00 to 10.50
Stove plate and light cast scrap	9.25 to 9.75

Central Viaduct Contract Awarded—Scrap Not so Active.

Office of THE IRON TRADE REVIEW,
Penton Building, Aug. 22.

Iron Ore.—Some sales of moderate sizes have been reported recently, but furnace interests are showing very little disposition to make contracts. The vessel situation is even more unpromising than it has been. Shippers have difficulty in keeping their own vessels actively employed.

On base ores with the guarantee of 55 per cent on old range and Mesabi Bessemer, and 51½ per cent on old range and Mesabi non-Bessemer, we quote as follows: Old range Bessemer, $4.50; Mesabi Bessemer, $4.25; old range non-Bessemer, $3.70; Mesabi non-Bessemer, $3.50.

Pig Iron. — Recent purchasing by electric and stove interests has not stimulated buying among the smaller foundries, and the market in this territory is extremely quiet, especially within the city of Cleveland. It is apparent, however, that there is a fair foundry melt, as pig iron and coke are being delivered freely on contracts. We quote, delivered in Cleveland, as follows, for the remainder of the year:

No. 1 foundry	$14.25 to 14.50
No. 2 foundry	14.00 to 14.25
No. 2 southern	14.35
Gray forge	13.25
Bessemer	15.90
Lake Superior charcoal	17.50
Jackson Co. 8 per cent silvery	17.50 to 17.75

Coke.—While foundries are keeping up well with their contracts in the consumption of coke, and are even urging prompt shipment, they are not making new contracts. Many are covered up to July 1, 1912. No sales of furnace coke are reported. We quote:

Connellsville furnace coke, $1.50 to $1.60 for prompt delivery, and $1.60 to $1.70 for second half; Connellsville foundry coke, $1.85 to $1.95 for prompt, and $2 to $2.40 for second half.

Finished Material.—Very little business of large tonnage is being placed, but mills are receiving many small orders, which are keping them busy to a large percentage of their capacity. The contract for the new steel river span in the Central viaduct, Cleveland, involving 580 tons, has been awarded to the King Bridge Co., Cleveland. The bid was $40,828 and the contract includes a provision for the removal of the old span. The Republic Structural Iron Works Co., Cleveland, was awarded the contract for six track stringers, 120 tons, for $19,969.50. The steel for these contracts has not been ordered by the contractors. Rumors of cutting on structural materials have been persistent, but cannot be authenticated; 1.35c, Pittsburgh, is being ordinarily paid on small tonnages. Tank plates are being cut, but boiler plates are holding firmly to official prices. Nuts and bolts seem to have struck the very lowest prices possible. Cutting of prices on shafting is still in evidence. There is only moderate demand for bar iron, but prices are not quite as weak as they were some time ago.

Old Material.—The local market, while still fairly firm in the matter of price, is not so strongly bullish as it was a week ago. Some of the larger local consumers of heavy steel have covered for immediate requirements the past few days, as much as 3,500 or 4,000 tons changing hands. Since then, however, buying has quieted somewhat and prospects are that little further business in heavy steel will be done for some weeks. One local mill is still in the market for busheling, having been able to buy at the offered figure, $10.50, only a limited tonnage and that in small quantities. We quote, f. o. b. Cleveland, gross tons, as follows:

Old iron rails	$15.50 to 16.00
Old steel rails (under 6 ft.)	13.00 to 14.00
Old steel rails (over 6 ft.)	13.50 to 14.00
Relaying rails	20.00 to 21.00
Old car wheels	12.00 to 12.50
Old steel boiler plate	10.00 to 10.50
Malleable iron (railroad)	12.00 to 12.50
Steel axles	19.00 to 19.50
Axle turnings	9.50 to 10.00
Malleable iron (agricultural)	11.50 to 12.00
Heavy steel	12.25 to 12.75
Country mixed steel	9.50 to 10.00

We quote, net tons, as follows:

No. 1 R. R. wrought	$12.00 to 12.50
No. 1 busheling	10.75 to 11.50
No. 1 machine cast	11.50 to 12.00
No. 1 dealers' wrought	11.50 to 12.00
Machine shop turnings	8.00 to 8.50
Pipes and flues	8.00 to 8.50
Wrought drillings	8.00 to 8.50
Stove plate	9.50 to 10.00

Held Annual Outing.—The general office employes of the American Sheet & Tin Plate Co., of Pittsburgh, held their annual outing Aug. 19 at Cascade park, near New Castle, Pa. The outing was well attended and proved very enjoyable. An excellent program of games, dancing, etc., was provided, the tastefully printed card being the work of the advertising department of the company.

Announcement is made that the Union Pacific railroad has issued orders laying off 2,500 shop employes under its general retrenchment plan recently announced.

Some Pig Iron Moving, But Buying Check Undoubted.

Office of THE IRON TRADE REVIEW,
808 Provident Bank Bldg., Aug. 22.

Pig Iron.—The recent hardening of southern iron prices has had a tendency to slacken business to some extent, although a number of orders have been placed for small tonnages, and there are several inquiries out that may develop into business soon. It is claimed as to Alabama irons that the $10 price for prompt shipment is not at all attractive to the furnace interests, who are generally adhering to $10.25 to $10.50 for any shipment this year. A few are asking $11 at furnace, although they are not taking on any business at this figure, even when deliveries are extended into the first quarter of next year. Recent sales include 2,000 tons of southern foundry iron, running from 2 to 2½ per cent in silicon, bought by a northern Ohio melter, for this year's shipment, at $10 Birmingham basis. A nearby consumer is also understood to have covered for 500 tons of high silicon iron for the same price and delivery. Among northern sales is one for 1,500 tons of Nos. 2 and 3 foundry iron, to a southern Ohio firm, for last half delivery. Michigan territory furnishes an inquiry for 2,500 tons of northern No. 2 foundry and high silicon mixed and also one for 800 tons of low phosphorus and Bessemer, both for last quarter movement. Shipments on contracts are said to be moving fairly well, and there has probably been an increase in the melt of local foundries. Northern iron continues quiet and prices remain around $13 to $13.25 for any shipment this year. For the first quarter of next year, some northern No. 2 foundry is obtainable at $13.50, but $14 is the general asking price. There is little inquiry for malleable, which is also quotable at from $13 to $13.25 Ironton.

We quote as follows, with freight rates from Birmingham $3.25, and from Ironton $1.20:

Southern foundry No. 2	$13.25
Southern foundry No. 3	12.75
Southern foundry No. 4	12.50
Southern gray forge	12.00
Mottled	12.25
Southern No. 1 soft	14.70
Southern No. 2 soft	14.20
Standard southern car wheel	25.50
Northern No. 2 foundry	14.20
Northern No. 3 foundry	13.70
Northern No. 4 foundry	13.20
Jackson county 8 per cent silicon	16.95

Coke.—In all three districts the demand is quiet, with the exception of the Connellsville field, where there is a better call for furnace coke. Furnace coke prices there have also stiffened, and a few producers are asking $1.90 on future contract business. In this immediate territory there are very few inquiries out, and these call for small lots of 72-hour coke for prompt shipment. We quote from the leading coke producing districts:

	Prompt shipment.	Contract second half.
Connellsville district:		
Foundry coke	$2.00 to 2.25	$2.00 to 2.40
Furnace coke	1.55 to 1.65	1.75 to 1.90
Wise county district:		
Foundry coke	2.00 to 2.25	2.00 to 2.25
Furnace coke	1.75 to 2.00	*Sliding [scale basis.
Pocahontas district:		
Foundry coke	2.00 to 2.15	2.00 to 2.35
Furnace coke	1.60 to 1.75	1.75 to 1.85
New river:		
Foundry coke	2.50 to 3.15	2.60 to 3.25
Furnace coke	2.10 to 2.15	2.10 to 2.20

*Sliding scale basis means $1.60 for coke based on $9, Birmingham, for pig iron, with an advance of 16⅔ per cent of the amount over $9 at which pig iron is quoted. This is the usual basis. Other forms of sliding contracts are also made.

Finished Material.—Specifications on contracts are coming along freely, and this applies especially to steel bars and structural material. Hoops and bands are also being shipped promptly. It is rumored that where a desirable tonnage was involved, a few steel bar orders in this territory have been booked on the basis of 1.20c, Pittsburgh. Sheets also continue somewhat weak, but the inquiry for tin plate sizes is said to be holding up fairly well.

Old Material.—Dealers state that they feel the situation is better, but as one dealer put it, "it's all in the feeling." Business continues slow, and only a general revival that would include healthy advances in pig iron, will help out the situation to any material extent. We quote dealers' prices about as follows:

GROSS TONS.

Old iron rails, gross	$14.00 to 14.50
Old steel, rerolling, gross	13.00 to 14.00
Old iron axles, gross	19.25 to 19.75
Steel melting scrap, gross	11.00 to 11.75
Car wheels, gross	11.50 to 12.50

NET TONS.

Old No. 1 R. R. wrought	$12.25 to 12.75
No. 1 machinery	10.50 to 11.00
No. 1 busheling	9.25 to 9.75
Stove plate	7.75 to 8.25
Machine shop turnings	6.50 to 7.00
Cast borings	5.50 to 6.25
Grate bars	7.25 to 8.00
Sheet scrap, bundled	8.00 to 9.00
No. 1 cast scrap	10.00 to 11.00
Heavy turnings	7.75 to 8.75

The Steel City Electric Co., Pittsburgh, has appointed as Pacific coast sales representative, the Aylsworth Agencies Co., 143 Second street, San Francisco. A large stock of outlet boxes, insulator supporters, etc., will be kept on hand to supply all points on the coast.

Finished Price Cutting More General —Pig Iron Holding Firm.

Aug. 21.

As the quietness in new finished business has become more extended, the keenness of competition among the mills and cutting of prices seem to have increased, at least the latter is now standing out more conspicuously. There is practically no finished product, excepting rails, in which some reports of price shading are now current in the market and most of these reports are supported by clear examples. Some eastern makers are acting more conservatively in meeting the consumers. Though the week in pig iron has been quiet the hardened condition of prices is clearly reflected. In basic iron additional developments have contributed strength and this grade seems headed for higher prices. Scrap is easier in demand and prices in some grades are lower.

Pig Iron.—Greater steadiness in the pig iron markets of eastern Pennsylvania and adjoining districts continues apparent and though the matter of advances seems quite remote, hardness in the ruling schedules is generally shown. The leading producers of the standard grades of iron are moving more deliberately in the booking of additional tonnages of size for forward shipment because of the assurance given them by their better filled order books. None is inclined to anticipate future conditions and quote for delivery after the first of the year, though some attractive business, especially in steel-making metal, for such shipment is pending. The week under review has been extremely quiet, both in new inquiries and orders placed, but not an unusual week for this time of year. Negotiations continue to go forward on several large blocks of various grades of iron, and action is expected upon these shortly. Foundry iron is moving in a limited way and in a fair tonnage but average sales are still of very moderate size. The standard grades of eastern Pennsylvania 2X irons are selling at from $15 to $15.25, delivered Philadelphia, or about $14.50, furnace. Virginia iron for third quarter at $12.25, furnace, is on the same delivered basis. In the Lebanon district, however, some furnaces frequently go to $14, furnace, for 2X or slightly less than the Lehigh and Schuylkill valley grades delivered in Philadelphia. Quotations of $14.80, de-

livered in territory nearby Philadelphia were made this week, one soil pipe maker taking 800 tons of low grades and 200 tons of 2X for shipment over the balance of the year at about this price. Western Pennsylvania furnaces have sold some iron recently in Philadelphia at $15.25, delivered, for 2X, or $13.20, furnace. The Virginia market is well established at $12.25 to $12.50, furnace for 2X for shipment this year. The Princess furnace there is to be blown out shortly, which will reduce the operating furnaces to five in that territory. Stocks, apart from the large accumulation of the leading maker of that district, are relatively small. Cast iron pipe makers in Delaware river district have recently been paying $9.50, Birmingham, or $13.70, delivered, for southern forge. The leading maker has bought about 1,000 tons of forge for prompt shipment in the territory at about this price. Another large pipe interest offers to purchase a round block of lower grades on the basis of $9.25, Birmingham, for forge. Standard northern forge for puddling purposes is quoted about $14.25, delivered. A locomotive interest has recently taken 1,000 tons of this grade. Further developments have strengthened the basic iron situation in the east and predictions are being made that the market for such iron will shortly reach $15, delivered, for this year. One producer who has had a round tonnage of basic upon its hands has disposed of a considerable portion of this to different eastern consumers at about $14.25, furnace, equivalent to about $14.75, delivered to most purchasing plants. One lot of less than 1,000 tons sold this week, was done at $15, delivered. One eastern consumer continues to negotiate for 10,000 tons for the balance of the year, and the large Coatesville buyer is still out for 25,000 to 30,000 tons for first quarter as the price views of itself and the sellers are considerably apart. It is understood that it will also buy some additional tonnage for fourth quarter for which it recently bought several blocks. In low phosphorus iron, one large block is being figured upon. Sales of the week have been small. A steel foundry took 300 tons of the Lebanon district brands at $16.50, furnace. Standard low phosphorus is held at about $18, New York furnace, or $20.50, Philadelphia.

We quote for prompt and third quarter shipment as follows:

No. 1X foundry	$15.25 to 15.50
No. 2X foundry	15.00 to 15.25
No. 2 plain	14.50 to 15.00
Standard gray forge	14.00 to 14.25
Basic	14.50 to 14.75
No. 2X Virginia	15.05 to 15.30
No. 2 southern	14.00 to 14.50
Standard low phosphorus	20.50 to 21.00

Finished Material.—Price concessions in finished lines have come into greater prominence in eastern territory and excepting rails there is scarcely a product of the list that is not subject to some shading on the more attractive orders, according to actual cases reported or to well-defined rumors. The market is quieter, new business is only moderate and it may be that such conditions are making the price irregularities more conspicuous at this time, but it remains that the mills are competing keenly for orders in all lines and apparently are less inclined than for some time to hold to the recognized levels. The price cutting is usually represented by $1 a ton and this is its general extent on the more desirable orders for plates, shapes, wire, billets, steel bars, sheets and tin plate. Some buyers report having been quoted structural angles under 1.30c, Pittsburgh, or 1.45c, Philadelphia, but such a price is substantially the market's minimum. Tin plate is said to have been quoted as low as $3.60 per base box for domestic shipment. Wire nails have been quoted in the east at 1.65c, Pittsburgh, and plain wire at 1.45c. Steel bars, though they seem firmer, were sold in this market this week at 1.20c, Pittsburgh.

The general cutting is giving the market to some extent an unfavorable aspect, but a considerable volume of regular business is being taken at full prices, and some future requirements contracted for on this basis. The sale of 300 tons of open-hearth billets by a Pittsburgh maker at full prices is noted. Some of the western Pennsylvania mills seem to have precipitated the present irregularity in the market by carrying the price cutting more zealously and openly to this territory. Some eastern mills, particularly in plates, state that they are still refraining from meeting the cuts. Concessions in plates are not so apparent in the east. Sheets also are stronger than in the Pittsburg and Youngstown districts because of the few makers, but cases of their being cut are being heard of.

Eastern mills are about maintaining their recent rate of output or approximately 60 to 70 per cent, working principally on old orders as the current tonnage is lighter. New structural offerings are comparatively few. Bids have gone in for the Savannah hotel, Savannah, Ga., 1,400 tons. The Pennsylvania railroad has up two cross-over bridges for Trenton, N. J., which will require about 300 tons each., and is putting out small work at present at the rate of about 2,000 tons monthly. The Elkins memorial Y. M. C. A. building, this city, 300 tons, is about to be placed. The general contract for the Philadelphia & Reading roundhouse at St. Clair, Pa., about 150 tons, has gone to the C. C. Bower Construction Co.

We quote, delivered in Philadelphia and vicinity, as follows:

Structural shapes, 1.45c to 1.50c; steel plates, 1.45c to 1.50c; steel bars, 1.35c to 1.40c; refined bar iron, 1.27c to 1.32c; cut nails, $1.75 to $1.80; blue annealed sheets, No. 10 gage, 1.60c to 1.65c; 4 x 4-inch open-hearth rolling billets, $23.40 to $24.40; forging billets, $27.40 to $28.40.

Old Material.—The market has eased off somewhat in demand and also in certain grades in price, reflecting doubtless the fact that consumers, since they obtained a considerable portion of the recently awarded railroad lists are even less disposed than before to negotiate with the dealers who were inclined to put up quotations upon them. In borings where the mills had offered up to $9.35 delivered they will now give but $9. Turnings are sentimentally weaker but not in price. No. 1 railroad wrought is less active at $16 delivered, though better than $16.25 was paid the railroads. Heavy steel reflects the changed tone in the market but is not appreciably lower in price. The buying volume of the market is light.

We quote gross tons delivered in eastern Pennsylvania and New Jersey territory as follows:

Old iron rails	$17.50 to 18.00
Old steel rails (rerolling)	14.25 to 14.75
No. 1 heavy melting steel	13.50 to 14.00
Old car wheels	13.00 to 13.50
Old iron car axles	24.00 to 25.00
Old steel car axles	18.50 to 19.00
No. 1 R. R. wrought	16.00 to 16.25
Wrought pipe	13.00 to 13.50
Cast borings	8.75 to 9.25
Wrought turnings	9.50 to 10.00
Heavy cast scrap	13.00 to 13.50
Railroad malleable	11.50 to 12.00
Stove plate	10.50 to 11.00

Freight rates per ton on scrap from Philadelphia to principal eastern consuming points are: $0.60 to Ivy Rock, Pa.; $0.65 to Phoenixville, Pa.; $0.80 to Coatesville, Pa.; $0.85 to Bethlehem, Pa., Reading, Pa., and Roebling, N. J.; $1.10 to Pottsville, Pa., Lebanon, Pa., and Columbia, Pa., and $1.20 to Harrisburg and Steelton, Pa.

Will Move.—The McCue Co., Hartford, Conn., manufacturer of automobile axles and forgings, is preparing to remove from its present location to Buffalo, where it recently acquired the Superior Axle & Forge Co., and merged it into the McCue Co., chartered under New York laws. The company will occupy the plant in Buffalo formerly operated by the Superior company.

ST LOUIS

Some Sales of Southern Foundry Iron For Last Half.

Aug. 21.

Pig Iron.—While there is nothing big in sight, quite a number of inquiries for pig iron in small lots are out in the St. Louis territory, and local sales agents seem to think that the market presents a stronger feeling. One sale of 1,500 tons of southern iron was made Friday for delivery in the St. Louis territory over the remainder of the year, and another of 250 tons of Lake Superior charcoal iron for immediate delivery, and still another for 2,000 tons of southern No. 2 for shipment over the last half and first quarter of next year. Prices remain nominally at $10 to $10.50 for southern No. 2, Birmingham basis, with northern iron being offered at $13 to $13.50, f. o. b. Ironton. Prices for southern iron, delivered, to which the Birmingham freight of $3.75 has been added, follow:

Southern No. 1	$14.25 to 14.75
Southern No. 2	13.75 to 14.25
Southern No. 3	13.50 to 14.00
Southern No. 4	13.25 to 13.75

Coke.—An inquiry for quite a tonnage of coke is out which may be closed before the week is out. Inquiries for small shipments are fairly good. Prices remain nominally as follows:

We quote 72-hour Connellsville foundry grades, $1.90 to $2.40 for whole of 1911; 72-hour foundry, $1.90 to $2.15 on tracks and for immediate delivery; 48-hour Connellsville furnace, $1.40 to $1.50; best 72-hour Virginia foundry, $2 to $2.25; 48-hour Virginia furnace, $1.60 to $1.85. The freight to East St. Louis and St. Louis is $2.80, and $2.70 from the Virginia fields when shipment is destined beyond St. Louis.

Finished Material.—One sale of 1,500 tons of standard rails was made the latter part of last week, and inquiry is fairly good today. Light rails are in fair demand. Inquiry is good for plates and bars, and railroads are buying track fastenings for immediate requirements.

Old Material.—The market continues to be agitated, and considerable buying is going on in a small way to fill the requirements of foundrymen. Prices remain as follows:

Old car wheels	$12.50 to 13.00
Old iron rails	13.50 to 14.00
Rerolling rails (4 ft. and over)	12.25 to 12.50
Old steel rails (2 ft. and under)	11.00 to 11.50
Light section relayers, 45 lb. and under, subject to inspection	19.50 to 22.00
Relaying rails, subject to inspection	24.00 to 24.50
Frogs, switches and guards	11.50 to 12.00
Heavy melting steel	11.50 to 12.00
Shoveling steel	11.00 to 11.50

We quote, net tons, as follows:

No. 1 R. R. wrought	$11.25 to 11.75
No. 2 R. R. wrought	10.25 to 11.25
Arch bars and transoms	13.50 to 14.00
Knuckles, couplers and springs	12.00 to 12.50
Shafting	14.50 to 14.75
Iron car axles	17.50 to 18.00
Steel car axles	16.00 to 16.50
Locomotive tires	14.00 to 14.50
No. 1 country wrought	9.50 to 10.00
Pipes and flues	8.00 to 8.50
No. 1 busheling	9.25 to 9.50
No. 2 busheling	6.25 to 6.50
Cast and mixed borings	5.50 to 6.00
Machine shop turnings	7.00 to 7.50
Railroad malleable	9.50 to 10.00
Agricultural malleable	8.50 to 9.00
Stove plate	9.00 to 9.50
Angle splice bars, iron	11.75 to 12.25
Angle splice bars, steel	11.00 to 11.50

BUFFALO

Pig Iron Fairly Active and Some Movement in Structurals.

Aug. 22.

Pig Iron.—The pig iron market has been fairly active and the tonnage booked within the district during the week was in the neighborhood of 10,000 tons. Many inquiries for 1912 delivery are coming in, but furnaces continue to refuse to make quotations on this business. Inquiries for delivery the remainder of the year are not numerous and the furnace people believe that most of the buyers in this district are pretty well covered for last half needs. In spite of this the only sales that have been accepted for first half delivery are a few small orders of charcoal iron. Prices remain unchanged.

We quote f. o. b. furnace, as follows:

No. 1X	$13.50 to 14.00
No. 2X	13.75
No. 2 plain	13.50
No. 3	13.50
Gray forge	13.00 to 13.25
Malleable	13.50 to 14.00
Basic	13.75 to 14.25
Charcoal	16.50 to 17.50

Finished Products.—Structural material has been particularly active and prices in all lines are maintained. A couple of large jobs including the Bell telephone building and a building that is to be erected by another large corporation in Buffalo will be ready for figures in the near future. The steel contract for the General Electric Co. building was taken by the Riverside Bridge Co. All other lines continue fairly active.

Old Material.—Few sales have been made and business is generally dull. The prices here quoted are largely nominal. We quote gross tons, f. o. b. Buffalo as follows:

Heavy melting steel	$12.75 to 13.00
No. 1 railroad wrought scrap	14.75 to 15.25
No. 1 railroad and machine cast scrap	14.00 to 14.50
Old steel axles	18.50 to 19.00
Iron axles	23.00 to 24.00
Car wheels	13.75 to 14.25
Railroad malleable, scrap	13.75 to 14.00
Machine shop turnings	7.00 to 7.25
Cast iron borings	6.50 to 6.75
Low phosphorus steel scrap	17.00 to 17.50
Old iron rails	16.75 to 17.25
Tank iron	10.75 to 11.25
Sheet iron	6.50 to 7.00
Pipes and flues	10.75 to 11.25
Stove plate	12.00 to 12.50
Grate bars	11.50 to 12.00
Boiler plate	11.50 to 12.00

NEW YORK

Large Tonnage for Kansas City Terminal—General Price Cutting.

Office of THE IRON TRADE REVIEW, 1115 West Street Bldg., Aug. 22.

Iron Ore.—Trans-Atlantic freights on iron ore cargoes are still holding to high levels. The steamer Ludo Vica was chartered the past week from Talanta, Greece, to Philadelphia, for a cargo of 5,000 tons of chromiferous ore at 11s. This is an advance of 1s over the last previous charter from that port to this country. A sharp advance in the rates on manganese ore from Bombay, India, to Philadelphia, has also taken place, the last charter being made at 21s, an advance of 5s from the last previous engagement. New sales are chiefly in small scattered lots, in which the small domestic deposits in the east largely figure. These sales are usually from 7½ to 7¾ cents per unit, delivered to the furnace. The forward movement at present is running light.

Pig Iron.—Practically the only development of interest in the pig iron market in the metropolitan territory in the week has been the initial appearance of some inquiry for delivery after Jan. 1. Several buyers of foundry grades are inquiring for comparatively small lots, aggregating in all about 1,000 tons for first quarter shipment, but they have found makers slow to make quotations on such business. The furnaces are in doubt as to what they should ask for metal for such a forward period and prefer acting slowly until at a nearer date to that time. The small sale, usually from 300 to 500 tons, remains the basis of current negotiations. The aggregate of such business is making a fair total. A railroad equipment interest is inquiring for 700 tons of malleable for September and November shipment. Central Pennsylvania furnaces continue active in underselling eastern Pennsylvania, Buffalo and Virginia makers at tidewater points in this territory and they are, accordingly, booking a good proportion of the going business. These makers continue to quote 2X iron down to $13, furnace, equivalent to $14.85, New Jersey tidewater, and $15.05, at Con-

necticut water points. The minimum eastern Pennsylvania makers will do at tidewater is about $15 for 2X and not all the furnaces will do this. Buffalo iron holding at $13.50 for 2X is having difficulty to meet this competition at Connecticut water points, even by barge transportation, as it is now difficult to obtain charters between these points at $1.50 a ton. Some small sales of Lebanon low phosphorus grades have been made in New Jersey and other nearby points to this market at $16.50, furnace. One large block of this grade is in the market. One active Niagara furnace, Buffalo, is preparing to go out of blast and will probably blow out sometime in September. We quote, delivered at New York tidewater, for prompt and third quarter shipment as follows:

Northern foundry No. 1	$15.25 to 15.50
No. 2X foundry	14.85 to 15.25
No. 2 plain	14.50 to 14.75
No. 2 Virginia	15.05 to 15.30
No. 2 southern foundry	14.00 to 14.50
Malleable	15.00 to 15.25
Gray forge	14.00 to 14.25

Ferro Alloys.—While some material for early shipment which is largely in merchants' hands is available at lower prices the market on forward ferro-manganese at least for delivery after Jan. 1, is firmly $37, seaboard. Some buyers who have recently endeavored to shade this price, have found their efforts unavailing and have bought at the full figure. A Sharon, Pa., consumer took 400 tons for eight months' delivery after March 1, 1912, at $37, Baltimore. Some small prompt lots have been sold at $36.50, seaboard and higher. The inquiry is light. Some carload business is pending in 50 per cent ferro-silicon and range of prices is wide. It is reported that one fair sized block of Bessemer ferro-silicon is pending. We quote 80 per cent ferro-manganese for prompt shipment at $36.50 to $37, Baltimore, and for forward shipment at $37, Baltimore, and 50 per cent ferro-silicon at from $52.50 to $53.50, Pittsburgh.

Cast Iron Pipe.—The United States Cast Iron Pipe & Foundry Co. has taken 3,000 tons for private work at Boston from the engineers, Stone & Webster. The Warren Foundry & Machine Co., Phillipsburg, N. J., received the 1,800 tons of 60-inch for New Bedford, Mass. Shelbourne Falls, Mass., will take bids next week on 1,100 tons. Some makers of cast iron pipe report improvement in conditions in that more tonnage is offered, but extremely low prices still prevail. We quote 6-inch pipe at from $21 to $21.50, f. o. b., New York.

Finished Material.—New business in the finished lines in the east is coming in at a reduced volume and in this respect the market is quiet. There have been some changes to a lower gait of operations with some makers, but in the main, the accumulation of business on books is providing sufficient specifications to keep the mills engaged about the recent stage of active capacity. The market displays the same tendencies that have characterized it for some time. Consumers are buying carefully and largely for actual consumptive requirements and immediate shipment is invariably requested with the placing of an order.

The market hears many reports of price irregularities, most of which are apparently well founded. These apply to practically all lines. Steel bars continue easy, and in some eastern markets shapes are softer. Other lines are only relatively firmer on desirable business. There is a louder complaint to be heard from the fabricating shops at the low prices that have recently been quoted on the heavier tonnages by some of the larger companies. These, it is claimed, represent scant, if any, profits and are having a tendency to demoralize the whole situation. These conditions have prevailed for a good many months. Rivet prices are being freely cut, and structural rivets have been selling at 1.75c, New York, and lower, in some cases, or $2 a ton and more under the regular Pittsburgh quotations. This product seems to be suffering from an excess of producing capacity.

The structural situation shows some good-sized work being let and in prospect, but the new offerings have considerably diminished. Eastern railroads furnished some of the largest inquiries and contracts of the week. The New York Central railroad has placed 5,000 tons with the American Bridge Co. as an additional allotment for its terminal work under way in this city. This road will continue to put out a large tonnage on this contract during the next year. The Boston & Maine railroad, which has been placing bridge work pretty freely during the past six months, has entered the market for 5,000 tons additional. The Central of New Jersey has placed two small highway bridges, 200 tons, with the Pennsylvania Steel Co., and a Scherzer lift bridge over the Elizabeth river, 300 tons, with the Phoenix Bridge Works. The most recent Boston & Maine contract, 100 tons, went to the Boston Bridge Works. The 14,000 tons of steel for the Kansas City Union station, for which the Geo. A. Fuller Co. has the general contract, has been awarded to the American Bridge Co. The Lake Shore railroad is inquiring for bridge work in the western markets.

Other awards of the week include 2,000 tons to Levering & Gerrigues, for the addition to the Ritz-Carlton hotel, this city; 350 tons to the McClintic-Marshall Construction Co., for a mill building for the Ingersoll-Rand Co., Phillipsburg, N. J.; 300 tons to the Eastern Steel Co., for the R. H. McDonald loft on East Nineteenth street. The Standard Concrete Steel Co. has the contract for the floor construction and reinforcement and will let the 1,000 tons of steel required for the Reither building, Waterbury, Conn., for which Tracy Bros., of Waterbury, have the general contract. Milliken Bros., Inc., will fabricate the 6,000 tons for the Bamberger store, Newark, N. J., having been sublet the work by the Bethlehem Steel Co., the original contractor. The Thompson-Starrett Co. has taken the general contract for the Field museum, Chicago, and is now asking bids on the 10,000 tons of steel required. Bethlehem sections are specified on this building. Post & McCord have the general contract for the Montana Realty Co. apartment up-town to require 900 tons, which will go to the American Bridge Co. The Geo. A. Fuller Co. has the general contract and is asking for bids to close Aug. 24 for a building for the Locomobile Club of America, on West Sixty-first street. Paterno Bros. are taking bids on two large apartments to be erected on Broadway, between 115th and 116th streets, which will take about 2,000 tons or more. Bids go in on Aug. 29 on 600 to 700 tons of steel construction for the rebuilding of the state capitol at Albany, the general contract for which has been placed on a percentage basis. The 1,200 tons for the Manhattan Soap Co. buildings, this city, for which Bethlehem sections have been specified, is still pending. Plans were sent out this week by the architects, Burnham & Co., soliciting bids on the general contract for the new post office at Washington, D. C., which will require a large tonnage. The building for the bureau of printing and engraving, the reappearance of which in revised form has been expected for some time, is still held up, though it probably will be out within the next several months. This work originally called for about 4,000 tons. Bids were taken this week on the Filene building, Boston, 6,000 tons. The Aeolian building, this city, 4,000 tons, is still pending. Rufus & Brown are the general contractors for the Waver-

ly, N. Y., high school, about 150 tons.

The Erie railroad has placed its locomotive order, awarding 20 Mikado engines to the Baldwin Locomotive Works, 15 Mikado engines to the American Locomotive Co., and five switching engines each to the American Locomotive Co. and the Lima Locomotive & Machine Works. In addition, the company will build 10 to 20 switching locomotives in its own shops. We quote, delivered at New York tidewater, as follows:

Angles, 3 to 6 inches and heavier, 1.46c to 1.51c; tees, 3 x ¼ inch and heavier, 1.46c to 1.51c; plates, tank, carload, 1.46c to 1.51c; locomotive steel, 1.56c to 1.61c; marine boiler, 1.86c to 1.91c; bar iron, 1.30c to 1.35c; soft steel bars, 1.36c to 1.41c.

Old Material. — The market has weakened considerably in the week, and prices in most grades are off about 25 cents. Buyers seem to feel that prices have recently been held largely through speculative efforts and they are closing for little material at present, anticipating that still lower quotations may follow. Sales of steel scrap to New York brokers at $10.80, this city, are noted this week. Most of the leading eastern steel buyers are in a comfortable position regarding their requirements, having considerable stocks in their yards. We quote, gross tons, prices New York dealers will pay at tidewater, with the exception of cast scrap, which has a local demand, as follows:

Old car wheels	$10.75 to 11.00
Old iron axles	17.50 to 18.00
Old steel shafting	14.50 to 15.00
No. 1 heavy melting steel	10.50 to 10.75
No. 1 R. R. wrought	13.50 to 13.75
Iron track scrap	12.50 to 13.00
Wrought pipe	10.00 to 10.25
Cast borings	6.25 to 6.50
Wrought turnings	6.50 to 6.75
Heavy cast scrap	11.50 to 12.00
Railroad malleable	10.00 to 10.50
Stove plate	8.75 to 9.00
Grate bars	9.00 to 9.50

Freight rates on scrap per ton to Steelton, Pa., Columbia, Pa., Pottsville, Pa., and Harrisburg, Pa., are $1.50 from Jersey City and $2.00 from New York; to Coatesville, Pa., Ivy Rock, Pa., Phoenixville, Pa., and Reading, Pa., $1.50 from Jersey City and $1.80 from New York; to Bethlehem, Pa., $1.10 from Jersey City and $1.60 from New York, and to Roebling, N. J., $1.00 from Jersey City and $1.50 from New York.

The Moran Co., Seattle, is planning a new gray iron foundry, which will be built adjacent to the old foundry now in operation. The building will be approximately 100 x 200 feet in size and the plant will be equipped with modern appliances throughout. The cupolas, cranes and some other equipment in the old foundry will be moved into the new shop. A new 15-ton crane will be installed.

Construction has been started on the proposed plant of the Stephenson Charcoal Co. at Wells, Mich.

Making of Higher Prices on Pig Iron Checks Buying.

Birmingham, Ala., Aug. 22.

Pig Iron.—The extent to which the buying movement has been checked by the advance in quotations was more appreciable during the past week than at any time since the higher prices became effective. But a very small tonnage was engaged with practically no demand for forward deliveries. At this time, a round tonnage for delivery extending into the first quarter is pending, and several small lots for delivery within the remainder of the year are being considered. Quotations being made on prompt or last quarter deliveries are somewhat at variance with the asking price for first quarter or first half tonnage still undetermined. Certain of the leading interests continue to adhere to an $11 Birmingham basis for any delivery during the remainder of the year, but such figures are considered prohibitive and the market is conceded to be correctly represented by a $10.50 per ton Birmingham schedule. A lot of 500 tons of gray forge for shipment over the remainder has just been sold at $9.50 per ton at Birmingham and mention is made of the sale of 300 tons of No. 3 foundry for strictly last quarter shipment at $10.50 per ton Birmingham. For carload lots of No. 2 soft or No. 2 foundry a basis $10.50 per ton Birmingham was the highest price received during the week and those transactions involving a higher basis are considered unusual. An effort to engage 300 tons of high silicon iron at $11 per ton Birmingham, for prompt shipment, has just been made without success. The trading in basic iron during the week was very light. An inquiry for some 10,000 tons had consideration, but at this time it is understood that no part of the tonnage was awarded local manufacturers.

One additional furnace has just been blown in on basic iron and two additional furnaces for the production of foundry grades are being repaired. A lot of 100 tons of charcoal iron for comparatively early shipment was sold during the week. We quote the market for foundry iron as below per gross ton at Birmingham furnace for deliveries during the remainder of the year:

No. 1 soft and No. 1 foundry	$11.00
No. 2 soft and No. 2 foundry	10.50
No. 3 foundry	10.00
No. 4 foundry	9.75
Gray forge	9.50
Mottled	9.25

Cast Iron Pipe.—In this market, several small lots are up for letting during this week and the prospects for round tonnages at an early date are considered good. The rate of production is unchanged and shipments from all active plants are about equal to the daily production. Quotations as last revised are being maintained and the situation is generally satisfactory. We quote water pipe per net ton at local plants as follows: 4-inch to 6-inch, $22.50; 8-inch to 12-inch, $21.50; over 12 inch, average $20.50, with $1 per ton extra for gas pipe.

Coal and Coke.—The market for the best grades of steam coal continues fairly active. At least two large contracts for 12 months' requirements are to be placed about Sept. 1 and the preparation for resumption of operations at cotton gins and oil mills throughout the southern territory has added considerably to the aggregate movement. With an increase in the active blast furnace capacity, the market for furnace coke has slightly improved, but there is still a decided surplus. The demand for 72-hour foundry coke is fairly good and the advance made in price some weeks ago is being maintained.

Old Material.—A stronger demand for this material is in evidence and dealers' asking prices are no doubt firmer. The consumption at local plants has been very materially increased since last report and the continued scarcity of low grade pig iron has been very effective in bringing about higher prices for light cast and stove plate. No material additions have been made to local stocks, but shipments from the rural districts are expected at an early date. We quote dealers' asking prices as follows per gross ton f. o. b. cars here:

Iron axles	$15.00 to 16.00
Iron rails	13.00 to 13.50
Steel axles	14.00 to 14.50
No. 1 R. R. wrought	12.00 to 12.50
No. 2 R. R. wrought	11.00 to 12.00
No. 1 country scrap	8.50 to 9.00
No. 2 country scrap	7.50 to 8.00
No. 1 machinery	10.00 to 11.00
No. 1 steel	9.50 to 10.00
Old standard car wheels	11.00 to 11.50
Light cast and stove plate	8.00 to 8.50

METAL MARKETS

New York

Aug. 22.

Tin.—The general fear of a prolonged tin famine has been relieved by the news of a settlement of the London labor trouble, but the immediate outlook for available supplies to meet

consumptive demand is unchanged. Sellers of spot and nearby are demanding from 5c to 6c per pound above the London spot price. Some relief has been contributed by the United States Steel Corporation, in placing a portion of the large stock of metal carried by that concern on the market, but those who took advantage of its offerings paid full prices. That restricted buying to the lowest possible limits that would enable the consumers to keep their plants going and the volume of business has been light.

Since Aug 14, about 400 tons of tin have arrived at New York, most of which was Banca, and other off grades. Consumers gladly took what could be had, however, and paid as high as 45c for some of it. The market for Straits is nominally 46c. The arrivals since Aug. 1 aggregate 2,496 tons.

Copper.—The demand from both domestic and foreign sources has been light the past week. Some of the large sellers have offered electrolytic copper at 12.62½c, delivered, but the ruling quotation for that grade is still 12.75c, delivered, and 12.62½c, cash, New York. Lake is 12.87½c for the best brands. A few small sales of outside lots have been made at from 12.67½c to 12.75c. Shipments abroad continue heavy. The total of exports since Aug. 1 is 20,627 tons.

Lead.—The market has been quiet and firm. Consumers are either well supplied with metal or are suspicious of the present level of prices and holding off for a decline. Independent sellers are asking 4.55c and 4.60c in New York, and the American Smelting & Refining Co. 4.50c for shipments.

Spelter.—While the market had an easier tone at the end of the week, prices are unchanged. Prime western is quoted at 6.10c in New York.

Antimony.—There is no change in either demand for, or quotations on antimony. Cookson's is 8.50c, Hallett's is 7.75c, and Hungarian is 7.25c to 7.35c.

Chicago

Aug. 21.

New Metals.—The metal houses receive a large number of small orders for copper and other metals, but the tonnage is not large in the aggregate. This shows the general tendency of consumers to buy in small lots for prompt shipments. Very few sales of copper have been made for delivery beyond September. Spelter has advanced again, and tin is also higher.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Lake copper, carload lots, 13c; casting, 12¾c; smaller lots, ¼c to ⅜c higher. Spelter, car lots, 6.10c to 6.15c; lead, desilverized, 4.47½c in 50-ton lots; corroding, 25c per 100 pounds higher; sheet zinc, $8 list, f. o. b. La Salle, in car lots of 600-pound casks; pig tin, 46c; Cookson's antimony, 10c; other grades 9c to 10c.

Old Metals.—The brass foundries are plodding along with light order books, and are buying old metals only in small lots for prompt shipment. Some classes of tin and zinc scrap have advanced in sympathy with new metals.

We quote, dealers' selling prices, f. o. b. Chicago, as follows:

Copper wire, 12½c; heavy copper, 12c; light copper, 10½c; heavy red brass, 10½c; heavy yellow brass, 9¼c; light brass, 7c; No. 1 red brass borings, 9½c; No. 1 yellow brass borings, 7½c; brass clippings, 8½c; tea lead, 3.80c; lead scrap, 4½c; zinc, 4¾c; tin pipe, 40c; tin foil, 38c; pewter, 27c; electrotype plates, free from wood, 4c; electrotype dross, 3c; stereotype plates, 4½c; stereotype dross, 3¼c; linotype dross, 3¼c; prime slab zinc dross, $75 per ton.

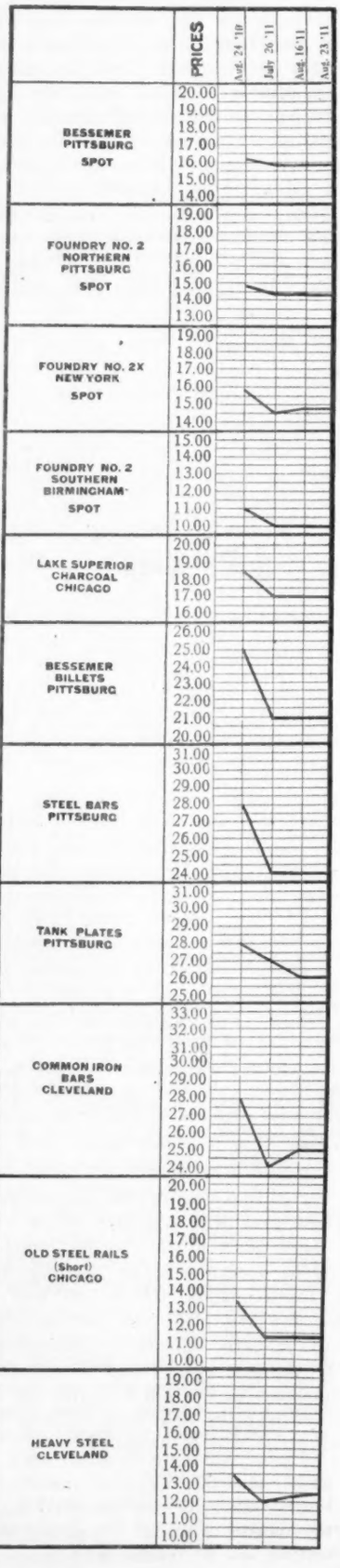
St. Louis

Aug. 21.

Lead and Zinc.—Choice lots of zinc blende brought $48 a ton in the Missouri-Kansas-Oklahoma district last week, the highest price of the year, with 60 per cent qualities selling for $44 to $45 a ton. The market was very strong, and very little ore sold for less than $44. The spelter market at East St. Louis remained strong at the close of the week, and stood at 6.05c at the close of business today. Work has been resumed in many of the mines in the Missouri-Kansas-Oklahoma district that were flooded as the result of recent rains, some of them having been idle several months. Calamine was strong at the close of the week, selling for $22 to $24 a ton for 40 per cent grades, with choice lots bringing as much as $30 a ton, the highest figure paid for some time. The surplus of calamine has nearly disappeared. Lead ore was strong at $60 to $62 a ton at the close of the week, with the metal selling at 4.45c, East St. Louis basis.

The new plant of the Lowith Bros. Iron Works Co., Denver, will be placed in operation within 30 days. The shops are located at First and Larimer streets. The equipment is complete, and will include five electric traveling cranes. Bridge and structural steel will be fabricated, the capacity of the shops being 12,000 tons annually.

PRICE CHART



HIGHEST POINT

In Present Year for Corporation Blast Furnaces—Stocks Decline.

Blast furnace operations of the United States Steel Corporation are reaching the highest point of the present year this week through the ordering in of another furnace of the Edgar Thomson group of the Carnegie Steel Co., which brings the total furnace activities at present to between 72 and 73 per cent. The highest previous mark of the present year was reached and maintained only for a short time in March at 72 per cent. The Steel Corporation blast furnace plants began the present week operating at 71 per cent. The blowing in last week of the Isabella furnace was offset by the blowing out for repairs of the Mingo furnace of the Carnegie Steel Co., but the ordering into commission of another Edgar Thomson stack provided a net gain in output. The blast furnace activities of the Steel Corporation have gradually increased over the past month from 62 to better than 72 per cent. Pig iron stocks of the leading interest continue to diminish. The reduction in the week was less than 10,000 tons, bringing the total iron on banks to slightly more than 150,000 tons. In ingot capacity, the Steel Corporation continues at about 75 per cent of capacity. It ran upon this basis last week and is scheduled the present week to operate at 74 per cent. Pig iron stocks in Pittsburgh valley and Ohio territory, exclusive of those of the Steel Corporation, also showed a sharp decline of about 25,000 tons in the first half of August and are now about 870,000 tons. The decrease was well divided between steel works and merchant furnaces.

Explains the Passing of Dividend

President R. L. Lemoine, of the United States Cast Iron Pipe & Foundry Co., in a letter to stockholders, explains the recent passing of the dividend on the preferred stock for the current quarter. The letter states that the company has suffered from the general depression in common with all manufacturers of iron and steel and that the low prices for pipe during the past two years make it even more necessary than ever the keeping of the plants at full efficiency. "The studies thus far made to this end indicate that considerable outlays will be involved," the letter continues. "The management, therefore, have concluded to temporarily take care of these extraordinary expenditures from earnings and confidently expect the improvements and economies that will be effected will result in such material reduction in cost as will greatly strengthen the company's position."

Iron Men to Become Pittsburgh Councilmen

Two members of Pittsburgh's new city council of nine have resigned in order to allow the remainder to select their successors so that all nine may stand for re-election this fall. New members selected, and who will be formally elected two weeks hence, are Robert Garland, president of the Garland Nut & Rivet Co., treasurer of the Garland Corporation and treasurer of the Bailey-Farrell Mfg. Co.; and P. J. McArdle, president of the Amalgamated Association of Iron, Steel and Tin Workers since the retirement of Theodore Shaffer nearly ten years ago. It is probable that Mr. McArdle will be unable to continue his work as president of the Amalgamated Association, but no official announcement on this subject is available as yet. It is not improbable that a meeting of the executive council of the association will be called next week to consider the matter. The resignation would probably be only for the new fiscal year which begins Oct. 1, and for which year the officers were elected at the recent annual convention.

Deny Rumor.—Chas. M. Schwab, president of the Bethlehem Steel Corporation, denies a published report that he is to be associated with Wm. Ellis Corey, former president of the United States Steel Corporation, in a combination of several leading independent steel companies. Mr. Schwab states that he will continue to devote his interests solely to the development of his present company. At the New York office of Mr. Corey, it was stated that he regarded the report as too old to merit a denial.

In a little treatise on "Bearings" are given some forty catechetical questions and answers on anti-friction bearings that were distributed some time ago among a few engineers. It is so written that the answers can be easily comprehended by anyone. The two types of anti-friction bearings, ball and roller bearing, are given a clear explanation and their uses, efficiency and adoption are plainly set forth. The treatise may be obtained by mailing 10 cents to J. A. Nelson, 11 John street, New York.

TIN PLATE SHADING

Of 10c a Box Applies Only to Desirable Business.

Pittsburgh, Aug. 23. (By wire.)

Shading of 10 cents per box on tin plate, which has prevailed recently, applies only on the most desirable orders, but on large tonnages calling for equal monthly deliveries, some of the mills will sell at $3.60, or 10 cents under the regular price, not only for the remainder of this year, but through the first quarter of next year. Some reports have been in circulation that slightly lower prices than these have been done, but careful investigation is said to show that nothing has been done below $3.60 even on the most desirable business. On ordinary orders, the market remains firm at $3.70. Tin plate production this week is about 70 per cent of the mills' capacity. Fully 80 per cent of the mills' capacity is in operation, the output per mill being lowered on account of the hot weather.

Further Purchases of Pig Iron

Pittsburgh, Aug. 23. (By wire.)

The Standard Sanitary Mfg. Co. has made further purchases of pig iron for its Northside, Pittsburgh, and New Brighton, Pa., plants since the purchase of 6,000 to 7,000 tons recorded in Friday's issue, making the total purchases about 10,000 tons of No. 2 and 3 foundry iron and gray forge for fourth quarter delivery to its Northside and New Brighton plants on the basis of $14.15 delivered, Allegheny, and $14.05, delivered, New Brighton.

Southern Sales and Stocks

New York, Aug. 23. (By wire.)

An important southern maker has sold about 75,000 tons during the past two weeks on a basis of $10, Birmingham, and now is asking $10.25. A central Pennsylvania steel company at a favored freight point has taken 2,000 to 3,000 tons of prompt Virginia basic at about $12.75, furnace. Virginia stocks now slightly exceed 275,000 tons, of which the largest maker has about 180,000.

The Howe Scale Co. has contracted to take over and market the entire product of the Winters-Coleman Scale Co., Springfield, O., through the newly established sales organization of the former company with headquarters at Rutland, Vt.

NO ENCOURAGEMENT

Shown by Lake Ore Trade For Remainder of Season.

There is little of an encouraging nature to be observed in the ore trade. The expected improvement in August has not materialized, though some sales of ore have been made. However, the quantity is not sufficient to keep vessels busy, shippers having difficulty in keeping their own ships employed, while independents that are carrying ore are well ahead of their schedules. Wild cargoes are very scarce, boats being offered freely for ore with no takers. This means that some vessels will go into winter quarters much earlier than was intended. September will probably see the end of the season for a number of them.

The table accompanying this article shows the movement by months for the past three years. It will be observed that during 1909 the movement opened cautiously with a steady growth from month to month until the fall, when, of course, thick weather makes a heavy movement impossible. During 1910 conditions were reversed. The season opened with a rush, only to spend itself in June, the movement thereafter exhibiting a slackening pace with a drastic slump in the fall months. It will be seen that month by month the movement during 1911 is sensibly less than that of 1910. The fleet moved to Aug. 1, 1910, 21,853,549 tons and to Aug. 1, 1911, 14,064,291 tons, a decrease of 7,799,258 tons.

If the movement of the remaining months of the present year should equal that of last year, the total movement for 1911 would be approximately 34,000,000 tons. It is now clear, however, that no such movement will mark the remaining months of the year, and total shipments are likely to fall under 30,000,000 tons. Following is the table:

	1909.	1910.	1911.
April	55,794	1,520,305	331,645
May	3,253,275	6,081,358	3,684,819
June	5,393,255	7,316,592	4,826,505
July	6,693,025	6,945,289	5,221,373
August	7,193,199	6,964,381	.....
September	7,050,985	6,273,832	.....
October	6,625,801	4,877,441	.....
November	4,899,220	2,641,886	.....
December	519,525	.....	.....

The present week has been marked by vicissitudes in various directions in lake trade. The coal tonnage on the market is the largest for the season, and there has been much delay in getting cargoes. In a few cases charters have been cancelled on account of the crowded condition of the docks at upper lake ports. Dispatch is very poor all around, some carriers having to wait five or six days to discharge their cargoes at upper lake docks. Delays such as this make a profit at prevailing rates impossible, and vessel owners would be money ahead to lay their vessels up for the season. The grain trade affords no relief, as the line boats are taking care of all of it.

Increase in Number of By-Product Ovens

During 1909 and 1910, the construction of by-product coking plants progressed at a more rapid rate than at any time since 1903, according to the report of E. W. Parker, of the United States geological survey. At the close of 1909, 649 ovens of this type were in the course of construction while 300 more had been contracted for. Of the 649, 99 were completed and put in operation in 1910. Work on the 300 ovens which had been contracted for was also commenced in 1910. The first by-product ovens in the United States were built in Syracuse, N. Y., in 1893. In 1910, the number of these ovens in the country was 4,078, of which all but 27 were active. This was an increase of 164 over the number in operation in 1909, and of 399 over the number in operation in 1908.

The production of coke in by-product ovens in 1910 amounted to 7,138,734 net tons, against 6,254,644 tons in 1909 and 4,201,226 tons in 1908. The increase in 1910 over 1909 was 14.13 per cent, whereas the total production of bee-hive coke increased from 33,060,421 net tons to 34,570,076 tons, a gain of 1,509,655 tons, or 4.57 per cent. The coke made in by-product ovens during 1910 was 17.12 per cent of the entire production. The bee-hive ovens, in 1910, consumed 53,559,285 net tons of coal, while in the same period the by-product ovens consumed 9,529,042 net tons. Thus the percentage of coal converted into coke in the bee-hive ovens was 64.54, while for the by-product ovens this figure rose to 74.9 per cent.

The total value of the by-products obtained in 1910 from the production of coke in retort ovens was $8,479,557, or a little more than one-third of the value of the coke produced, $24,793,016.

Date Changed.—Owing to pressure of public duties, President Taft has found it impossible to be in Pittsburgh on Sept. 16 to attend the national mine safety demonstration. However, he has indicated Oct. 27 as a suitable date, and the demonstration will be given on that day.

MUCH NEW BUILDING

Completed and Under Construction by Reading Iron Co.

Reading, Pa., Aug. 22.

To carry out its plan of modern brick and steel construction of all its plants, The Reading Iron Co. is soon to erect a new building for the No. 5 mill of the tube works on Willow street. Recent extensive improvements have been made at the plants there and the new building will be in keeping with the style of architecture. The Nos. 5 and 6 mills were closed today, and it is not likely that No. 5 mill will resume until after the new building is completed. No contract has as yet been let.

With the erection of the new mill building there will also be erected a new ball shed on the company's property in the locality of Seventh and Laurel streets. Within the past year several new buildings have been erected on West Oley street and the new Ninth street mills are in the course of construction.

The 8 and 11-inch mills of the Blandon rolling mills went on full time beginning this morning and giving work to a number of extra men. The department has been working on half time for about a year. The plant turns out skelp iron.

Foundry Closed Down

The stockholders of the Oostburg Steel Foundry Co., Oostburg, Wis., have voted to close the plant and bring operations to a standstill. It was voted also to place the property in the hands of the board of directors for three years, with authority to dispose of it in the best way possible. The foundry has been operating only intermittently since it was established.

Many Contracts Let

Most of the contracts have been awarded by the Pittsburgh Crucible Steel Co. for machinery, equipment, etc., in connection with the development of its coal property along the Monongahela river which was acquired some months ago. The contracts awarded so far include tipples, power plant and 64 houses.

The Kissel Motor Car Co., of Hartford, Wis., has awarded contracts for the construction work on its new shop building. It will be 107 x 200 feet, three stories. The equipment schedules have not been completed.

MINING INSTITUTE

Opens With Very Large Attendance —Mines Visited.

Crystal Falls, Mich., Aug 22. (By wire.)

The sixteenth annual meeting of the Lake Superior Mining Institute opened at Crystal Falls, on the Menominee range, with the largest attendance in its history on Tuesday afternoon. Visits were made by special train to Hollister and Tobin mines. At the Hollister, a new Atlas dryer was inspected. This is the first apparatus of its kind in the Lake Superior district and reduces the moisture in the ore from 15 to 4 per cent. It works on the principle employed in cement mill dryers and has a capacity of 150 tons per day.

An open air supper was served by the Crystal Falls Commercial Club at Idlewild, and a delightful program of entertainment was provided. The first business meeting was held Tuesday evening. Alexander M. Gow, Duluth, read an interesting paper on the safety devices of the Oliver Iron Mining Co., illustrated with numerous lantern slides. Chas. E. Lawrence presented a paper on social surroundings of mine employes.

Wednesday was spent inspecting mines in the Iron River district, the party being conveyed by a special train of Pullman cars.

After Venezuelan Ore

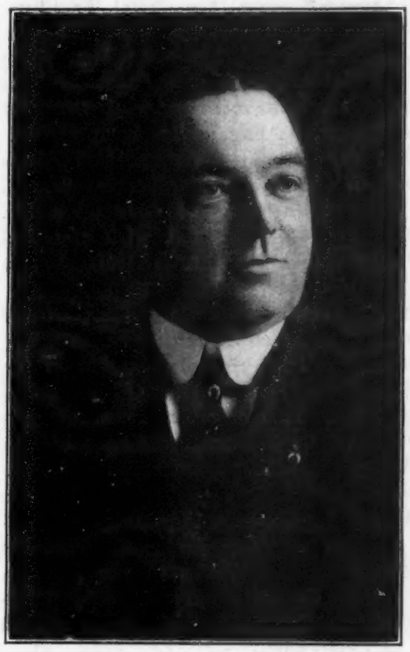
That the Venezuelan government has signed a contract with a representative of the Canadian-Venezuelan Ore Co., of Montreal, for the much talked of Imataca iron ore mine, is the statement contained in newspaper dispatches from Caracas. The Orinoco company, which formerly held the Fitzgerald concession which included the Imataca mine, forfeited it in 1909 under the protocol signed by former Special Commissioner William I. Buchanan.

Death of F. B. Shuster

Franklin B. Shuster, president and treasurer of the F. B. Shuster Co., New Haven, Conn., died at his home in New Haven, Aug. 14. He had suffered from bronchial asthma for several years and passed away quietly in his sleep when apparently recovering from an attack.

Mr. Shuster was born at New Haven, May 10, 1866. He learned the trade of a machinist with John Adt & Son, leaving there to become foreman of the machine and tool department of the New Haven Clock Co. Later he was for about six years with Wilmot & Hobbs Mfg. Co., now the American Tube & Stamping Works of Bridgeport, in charge of the machine and tool designing departments.

On the death of John Adt in 1895, Mr. Shuster purchased the business, Mr. Adt's son having died some years previous, and in 1898 the F. B. Shuster Co. was incorporated. The business was established in 1866 by John Adt, who invented and manufactured the automatic wire straighteners and cutters and riveting machines, which are now being turned out in large numbers and improved forms by the company. Mr. Shuster invented and patented many new machines and tools and increased the business so machinery of the company is shipped to all parts of the world.



FRANKLIN B. SHUSTER

Mr. Shuster was a genial, courteous gentleman, winning friends wherever he went, and devoted to his home.

Manning, Maxwell & Moore, Inc., will open a branch office in Los Angeles, Cal., with L. H. Bailey as manager. The new office will be under the direction of the San Francisco office.

The Pennsylvania Steel Co. is preparing one of its blast furnaces at Steelton for early resumption. Two of the company's Steelton furnaces are now operating.

Appraisal of Michigan's Ore Resources

The copper, iron ore and coal mines of Michigan are worth $190,161,145, according to the report made to the state tax commission at Lansing, Mich., a few days ago by Prof. J. R. Finlay, mining expert. The appraisal was made by direction of the state legislature in order to determine whether the mines are paying their part of the state's total taxation. Professor Finlay values the copper mines at $69,815,000; the iron ore mines, at $119,485,000; and the coal mines, at $851,745. The iron mines are valued by counties as follows: Gogebic, $41,560,000; Iron, $23,339,000; Dickinson, $11,508,000; Baraga, $335,000; Marquette, $42,743,000. These valuations, he reports, are based substantially on past and present earnings. The iron mines earned in five years $57,551,202 "without the benefit of any abnormal prices." He estimates that the Marquette, Menominee and Gogebic iron ranges will produce 360,000,000 tons more of ore.

Pennsylvania Charters

Harrisburg, Pa., Aug. 22.

Among capital stock and debt increases filed at the capitol lately were the Zug Iron & Steel Co., Pittsburgh, debt $280,000; National Foundry & Mfg. Supply Co., Williamsport, stock $15,000 to $30,000; Heisler Locomotive Works, Erie, stock, $150,000 to $200,000.

Charters issued recently to iron and steel concerns include: Case Crane Co., Pittsburgh, manufacture of crane and similar transportation appliances, capital $5,000, incorporated by Thomas S. Schultz, Hugh M. Stalling and David Stonecipher, all of Pittsburgh; and the Metallic Alloys Co., Bradford, capital $10,000, incorporated by W. C. Leary, A. R. Johnson and F. M. Willeson, all of Bradford.

The International Hoist Co., of Antigo, Wis., which recently consolidated with the Pioneer Iron Works, of Antigo, retaining the name of the former, is considering the erection of an addition to its plant. The company is cramped for room and the ever increasing volume of orders makes enlargement imperative.

The contract for the Stroh Brewing Co.'s brew house, Detroit, 650 tons, has been awarded to the Donovan Wire & Iron Co., Toledo, O.

TENNESSEE COMPANY

Well Supplied With Rail Orders—Exports Help.

New York, Aug. 23. (By wire.)

The rail business for the west and southeast has been especially good in recent months, as shown by the filled up condition of the mills of the Tennessee Coal, Iron & Railroad Co., which is practically sold up on rails for the year and bar plate mills also are heavily filled. The Tennessee company is, of course, profiting from the large export trade of the Corporation. The Colorado rail mills are also booked almost full for this year. This week the Illinois Steel Co. reports 8,900 tons, including 2,500 for the Wabash, previously announced, and 1,700 to traction lines. The Tennessee company officially reports the Southern railway order previously announced as 22,000 tons. A western line is inquiring for 7,000 tons. A small portion of bars for the Bradley subway sections has been placed with the Carnegie Steel Co., but the bulk of this tonnage is still pending.

Order for Gas Line Pipe

Pittsburgh, Aug. 23. (By wire.)

The Medina Gas & Fuel Co. has placed an order with the National Tube Co. for 60 miles of 10-inch gas line pipe for Ohio delivery.

Sale of Stonega Coke

St. Louis, Aug. 23. (By wire.)

A sale was made today of 5,000 tons of Stonega coke to a St. Louis melter for the remainder of the year.

Personal

James R. Cameron has been appointed agent for the Goodman Mfg. Co., of Chicago, at Fairmont, W. Va.

A. E. Newton, secretary of Prentice Bros. Co., Worcester, Mass., is in Europe on a six weeks' business trip.

Fred Thum and wife, of the Textile Machine Co., Wyomissing, Pa., have just returned from a European trip which covered a period of two months.

Robert E. Hall, formerly assistant manager of Francis Bros. & Jellett, Inc., Phihladelphia, has become vice president and treasurer of the Goulds Mfg. Co., Boston.

F. B. DeGress, for over 10 years district manager at New York for the Crocker-Wheeler Co., has become general sales manager of the Pulsometer Co., New York City.

W. E. Baird, who has had a wide experience in the sale of core oils and core compounds, will become associated in the capacity of salesman with the Robeson Process Co., Au Sable Forks, N. Y., beginning Sept. 1.

O. C. Thompson, formerly works manager of the National Wire Box Co., South Bend, Ind., has accepted a position as mechanical engineer of the Healy Box Corporation, New York City.

F. Nehrbas has become manager of the automobile plant of the American Locomotive Co., at Providence, R. I. He was formerly production superintendent of the E. R. Thomas Motor Co., Buffalo.

James T. McCleary, secretary of the American Iron and Steel Institute, has returned from a European trip, which included his attendance upon the international conference of iron and steel manufacturers at Brussels.

James W. Fagans has been appointed general sales manager of Abendroth Bros., Port Chester, N. Y. Prior to his present connection Mr. Fagans was affiliated with the Detroit Stove Works, Detroit, for a period of 13 years.

J. Turner Moore, president of the Reading Steel Castings Co., Reading, Pa., has been elected treasurer of the Reading Steel Castings Relief Association. This organization, which was formed by the employes of this concern, plans to pay sickness and accident benefits.

E. J. Sherwin, formerly superintendent of the Blake & Knowles Steam Pump Works of the International Steam Pump Works, Cambridge, Mass., has been appointed superintendent of the Fore River Shipbuilding Co., Quincy, Mass., to succeed Leo Chappell.

Thos. F. Du Puy, formerly associated with the National Acme Mfg. Co., Cleveland, in its New York office, has been made sales manager for the Windsor Machine Co., Windsor, Vt., in New York, New Jersey and part of Pennsylvania and in the south. He will be assisted by Frank Greiner.

Herbert E. Herrod, an attorney of Chicago, has been chosen assistant to Commissioner Robert Wuest, of the National Metal Trades Association. The election was made at a recent meeting of the executive committee of the association. Mr. Herrod entered upon his new duties Aug. 14. His offices will be in the New England building, Cleveland.

Wm. B. Dickson, former vice president of the United States Steel Corporation, has resigned from a special commission appointed by Governor Wilson, of New Jersey, to represent that state in the consideration of transportaton conditions of the Hudson river water front, about New York City, with the view of improving the dock and terminal facilities. Mr. Dickson tendered his resignation on the ground of ill health.

Obituary

Thos. Gregory, president of the Galvanizing Works, Brooklyn, died of paralysis, Aug. 19, at his home in Brooklyn, at the age of 51 years.

Arthur N. Fitzsimmons, general sales manager of the T. L. Smith Co., concrete machinery, Milwaukee, Wis., was instantly killed by a fall from his bed room window in his apartments. He was 44 years old and had been in charge of the Smith company's sales for five years.

Francis Collingwood, who took a prominent part in the building of the Brooklyn bridge, died at his summer home at Avon-by-the-Sea, N. J., Aug. 18, aged 77. He wrote extensively on engineering subjects and had received a gold medal from the English Engineering Society. He was a member of the American Institute of Mining Engineers.

The death of O. M. Steele, manager of the Cleveland yards of the American Ship Building Co., occurred Aug. 17, aged 68. He was an engineer on the great lakes for 20 years and brought out the first iron steamship used on the lakes. About 27 years ago he became associated with Robert Wallace, of the Cleveland Ship Building Co., now part of the American company, and became manager of the local yards.

John H. Osborne, who, with his brother, the late David M. Osborne, founded the Osborne works of the International Harvester Co., at Auburn, N. Y., died at Auburn, Aug. 16, at the age of 79 years. Mr. Osborne was well known for his strong espousal of the cause of abolition and in his youth he went with John Brown to Kansas, participating in a futile fight to make that territory free soil. He was a collector of etchings and engravings, but a fire, which destroyed his home in 1904, wiped out the most of what had been pronounced the best private collection in this country. Following the sale of his harvester works to the International Harvester Co., he retired from active business life.

The Upson Nut Co., Cleveland, relighted its blast furnace Aug. 14.

Radial Equipment for Industrial Railways

Designed for Use Where Sharp Curves Are Necessary — Description of a Successful Installation

Radial industrial railway equipment, for installation in foundries, machine shops, steel works and other plants, has recently been added to the extensive line of shop transportation equipment manufactured by the Atlas Car & Mfg. Co., Cleveland. This radial equipment is designed especially for installation in establishments where the lack of space and the grouping of the apparatus are such that only a system with sharp curves may be handily employed to adequately serve the various departments. The accompanying illustrations show a number of views of an industrial railway of this type installed in the plant of the Seager Engine Works, Lansing, Mich.

While the track for the radial systems is available in any of the usual narrow gages, it is customarily furnished in the standard gage of 21½ inches, measured outside of the rail head. As made by the Atlas company it weighs 12, 16 and 20 pounds per foot. The rails are usually fastened to channel ties, although flat or corrugated steel ties are furnished for use on wood paving or flooring. For the curves, however, cast iron units with depressed track are made use of in the standard gage in place of the regulation rail. Each unit contains 11¼ degrees, thus making eight units for a 90-degree curve. These units are cast with checkered tops and are designed for a curve of 12-foot radius.

As shown in the illustrations, the tracks as installed at the plant of the Seager Engine Works are on a level with the floor, while cement has been placed outside of and between the rails. Hence the free movement of hand trucks, portable hand cranes, etc., is not interfered with.

Special Wheels.

The cars which are designed for use on curves of short radius are provided with wheels whose flanges have flat bearing surfaces and are placed on the outside with respect to the rails. On approaching the point of curve, the flanges enter the grooves in the cast iron units. The bottom of the groove on the inner side of the curve maintains a depth sufficient to give a constant clearance to the wheel flange; the bottom of the outer groove, however, gradually ascends from the point of curve, with the result that the tread of the wheel is raised clear of the track and the bearing surface is transferred to the tread of the flange. Thus, in rounding a curve, the car travels on the treads of the inner wheels and on the flange treads of the outer wheels. In designing the radial wheels the difference in diameters through the tread and through the flange of the wheel was calculated to correspond to the extra distance to be traveled on the outer side of a curve of 12-foot radius. By means of this difference, the usual friction on both the inner and outer wheels is avoided and the car may traverse a curve with a full load and with an expenditure of no more than the amount of exertion usually required on a straight track.

In cases where a special gage of track is desired and the regular cast iron units may not be employed, curves of standard track are furnished. The outer rail of the curve in this case is provided with a specially designed rail for the wheel flange. This secondary rail is of angle iron, one face of which is riveted to the web of the standard rail, while the other projects from under the ball of the standard rail. When a radial car traverses such a curve, the tread of the flange on the outer wheel bears on the ball of the secondary rail, thus raising the tread of the wheel slightly above the surface of the standard rail and providing the required extra distance of travel to the flange circumference.

The switches for use with radial track are of cast iron with checkered surfaces and are constructed with right or left hand, or two-way and three-way branches. The length of straight track in a switch is 7½ feet, while that of the curved track is three units, or 33¾ degrees of a curve of 12-foot radius. The switches are furnished with either lever or plain throw as desired. Cast iron crossings, frogs and turntables are also furnished. The latter are manufactured with depressed track, raised track or plain checkered top, and in diameters of 4, 5 and 6 feet. All bearing surfaces of these turntables are machined and the rolls are at-

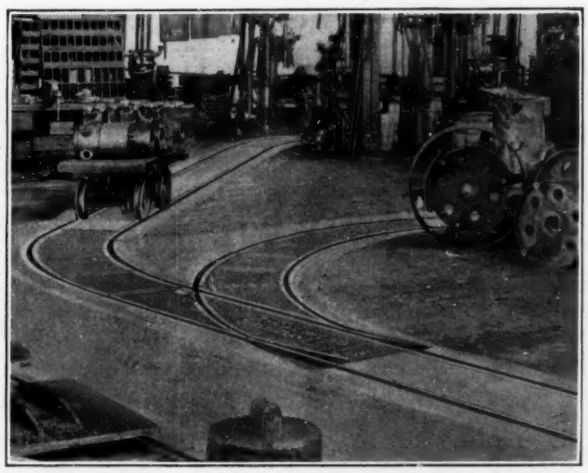


FIG. 1—RADIAL TRACK, CAST IRON SWITCHES AND CURVES, AND CAR IN THE ASSEMBLING ROOM OF THE SEAGER ENGINE WORKS

FIG. 2—A CURVE LEADING INTO A 400-FOOT SPUR

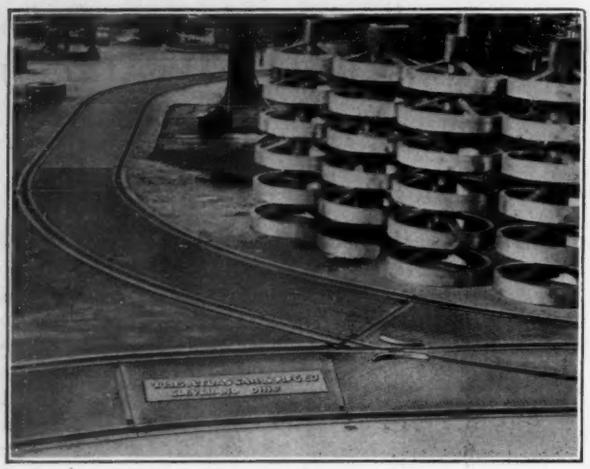


FIG. 3—A SHARP CURVE IN THE PLANT OF THE SEAGER ENGINE WORKS

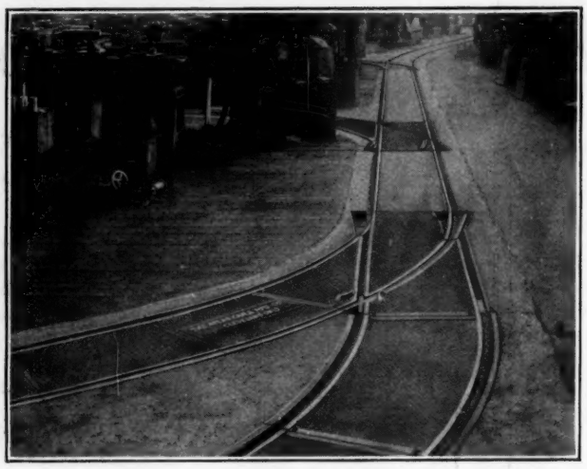


FIG. 4—A PORTION OF THE MAIN TRACK SHOWING CAST IRON UNIT TRACK AND RIGHT AND LEFT HAND SWITCHES

tached to wrought spider arms, being held in place by means of wrought collars and cotters.

The radial cars in use at the plant of the Seager Engine Works are of the flat type and are operated by hand power. These cars, as made by the Atlas Car & Mfg. Co., range from three to ten tons in capacity, the lighter cars being provided with four wheels and the heavier variety with eight wheels; in the latter case, the platform of the car is mounted upon two trucks which are equipped with swivel bearings. The axles, which run in steel-bushed bearings, are of cold rolled steel on which the wheels are forced by hydraulic pressure. The wheels may be of cast iron, manganese steel or open-hearth steel, as ordered. The underframing of the car is of steel and possesses great rigidity. The platform of the car may be of wood or of steel.

Other radial cars made by the Atlas company include side dump, coal, coke and ash cars; either side tip cars, flat cars with uprights, ladle cars; cars for handling bags and crates, crane cars, etc., as well as cars of special construction. A storage battery truck is also furnished for use where the hand pushing of cars is impracticable. In these cars, the driving axles carry the motors, while the controller, brake, charging receptacle, cut-out switch and volt-ammeter are mounted at the operating end of the car, thus leaving a clear loading surface. These cars range in capacity from 10 to 40 tons, and are made in the standard radial gage of 21½ inches.

Emery Wheel Safety Guard

At the plant of the Pittsburgh Steel Foundry, Glassport, Pa., a new type of emery wheel was given a trial, which was mounted in a Hassel, motor-driven swinging emery wheel stand, made by this company. The wheel was 24 inches in diameter and 3-inch face and had just been received from the manufacturer. The wheel had been revolving only a few minutes at 950 revolutions per minute when it burst. The force of the bursting of the wheel was so great that the operator who was holding the handles of the grinders was thrown to the ground, but was otherwise uninjured. The wheel was protected by a steel guard, which effectively held the broken parts. The protection afforded by the safety guard undoubtedly prevented serious injuries to a number of employes and several fatalities might also have resulted.

Silas Tomlinson, of Frank Samuel, Philadelphia, and Joseph Hittner, of Henry A. Hittner's Sons Co., Philadelphia, have sailed for the Canal zone of Panama to investigate the large amount of old French machinery and other scrap material which the government is offering in bulk to the highest bidder. As the government is desirous of getting bids for the purchase and removal of the scrap in the condition in which it lies today, the matter of submitting a bid presents wrecking and transportation problems of considerable importance.

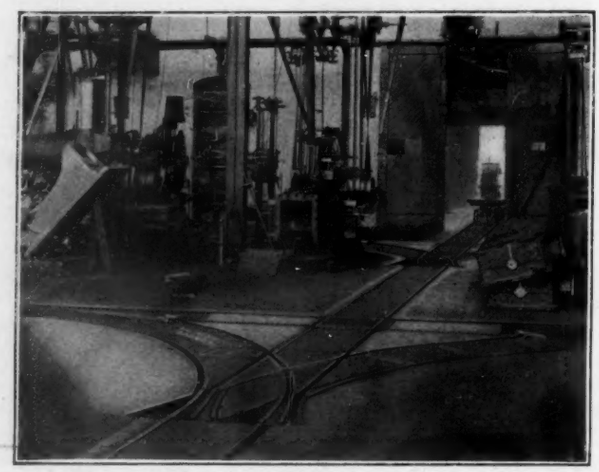


FIG. 5—AN INSTALLATION OF CROSSINGS AND SWITCHES

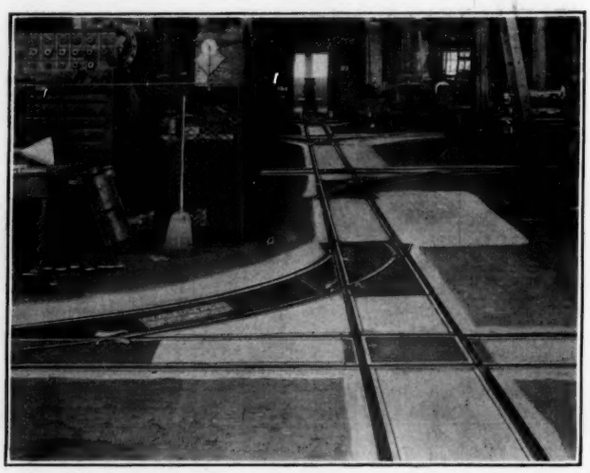


FIG. 6—A THREE-WAY SWITCH IN THE PLANT OF THE SEAGER ENGINE WORKS

The Annual Convention of British Foundrymen

Report of the Proceedings of the Glasgow Meeting and Discussions of the Papers Presented—Special Iron for Foundry Use

By J. Horton, Staff Correspondent

The British Foundrymen's Association held its annual convention at Glasgow, Scotland, the meeting continuing for three days, beginning Tuesday, Aug. 8. This occasion served as a striking comparison between the present day of prosperity of this organization and the small beginning of the association, when in 1905, in the second year of its existence, the foundrymen first met in this city. At that time there were about 100 members enrolled, but on this occasion a total membership was reported of 674, and the Britishers are distinctly proud of the fact that their strength now exceeds that of the American foundrymen's organization.

In the absence of the lord provost, Baillie Russell offered the municipal welcome. On behalf of the governors of the Technical college, the welcome was endorsed by Mr. Macdonald. Baillie J. King, president of the Glasgow branch of the British Foundrymen's Association, replied to the addresses of welcome.

Report of the Council.

In its annual report the council of the British Foundrymen's Association recommended a prize scheme for the best papers presented at the branch meetings. It was suggested that the prize consist of a framed diploma suitably inscribed, one to be allotted to each branch, to be awarded to the active member or associate member giving the best paper at the annual meeting. The associate membership was increased during the year from 571 to 674.

Officers for the ensuing year were elected as follows: President, Percy Longmuir; senior vice president, C. Jones; junior vice president, S. A. Gimson, and secretary, J. H. Allbut. Members of the council were elected as follows: W. F. Bagnall, J. Ellis, C. Heggie, G. Hailstone, H. Jewsen, R. W. Kenyon, H. Pemberton, M. Riddell and T. Swinden.

Presidential Address.

In his annual address, President Longmuir directed attention to the duties of the members of the association. He said that all should be active workers and every member is expected to contribute his quota of such work and to give others the benefit of his observations when pioneering work has been done. He added that it is the duty of each member to apply himself to the development of foundry thought and real foundry progress.

Cast Irons for Foundry Purposes.

Herbert Pilkington followed with a paper, entitled "Cast Irons for Foundry Purposes," which is given in part, herewith:

This paper does not deal with soft foundry irons, but will consider the growing demand for a strong pig iron suitable for cylinders, rolls and other high-class work, which require a close, dense and strong pig iron of a high tensile strength. To a large extent this demand has been met by the manufacturers of what might be termed *artificial* pig iron, which has been remelted and refined. The stock materials used for this purpose consist of scrap, ingot molds, rolls, etc., mixed with a pig iron to which ferro-manganese or spiegeleisen may be added. These are manipulated to produce a certain supposed ideal composition of iron and a large amount of this iron is imported. The writer ventures the opinion that the iron resulting from these mixed products, many of which are burned, is in no sense a satisfactory substitute for the natural pig irons which were formerly more plentiful than at present. These artificial irons are rarely, if ever, homogeneous, being composed of materials which do not readily mix into a homogeneous mass, owing to their widely differing compositions and character.

Those who use such irons and who do not employ a chemist should look closely into the carbon conditions that obtain, by the aid of a consulting chemist. The writer is of the opinion that it has again become necessary to produce iron made naturally from iron ores which will fulfill the conditions demanded by modern foundry practice and which are free from oxygen, homogeneous and of considerable strength. Among mechanical tests the tensile test should only be relied upon, as the transverse test is unmechanical and unreliable. There are no straight transverse bars and, in addition, they are not machined. Furthermore, the characteristics of the iron are in no way properly defined, even if the bar were mechanically accurate. These irons must be judged by the accurately machined and easily measured tensile test bar and these tests must always accompany chemical or microscopic investigation so far as any work of research in castings or pig iron is concerned.

One of the peculiar features investigated in the sale of strong pig iron is the demand made by many foundry managers for low sulphur, which can be readily understood in the case of soft iron, but which, in a strong, tough iron, should be comparatively high. Many of the best cold blast pig irons contain 0.10 per cent sulphur and up to this amount the effect of the sulphur is to close the grain of the iron. The impression that it produces unsoundness does not hold in this class of iron, which has a tensile strength of from 32,000 to 36,000 pounds per square inch.

Cold and Hot Blast Iron.

Soundness is, of course, of importance in such an iron in which the silicon must be low, as a rule not exceeding 1 per cent in the very strongest iron. Fluidity and soundness are secured by 0.5 or 0.6 per cent of phosphorus, and at least 0.7 per cent of manganese, which frequently is as high as 1 per cent. The effect of this is to produce a high combined carbon. In this connection it may be pointed out, that the assertion frequently made that the use of cold blast in making such iron has some peculiar effect upon the iron itself, is erroneous. If the silicon is of the correct percentage, it makes no difference whether the iron is made with cold or hot blast. It is within the experience of all blast furnacemen at hot blast furnaces that the blast temperature, at times, must be lowered to keep down the silicon in the iron, because the furnace itself is too hot or on account of an accidental shortage of lime in the slag.

Sulphur.

The following analyses, typical of many irons, indicate that it is possible to obtain as low silicon in hot blast iron as in cold blast iron: Cold blast iron—Silicon, 1.02 per cent; sulphur, 0.08 per cent; phosphorus, 0.4 per cent, and manganese, 0.89 per cent. Hot blast iron—Silicon, 0.75 per cent; sulphur, 0.08 per cent; phosphorus, 0.60 per cent, and manganese, 0.78 per cent. These irons were made from practically similar materials. The terms hardness and softness have frequently given the writer much trouble in connection with foundry pig iron, and he is in agreement with Prof. Turner's remarks on the subject which follow: "Hard cast iron is brittle, and is deficient alike in crushing, transverse and tensile strength and seldom produces smooth castings. With metal which is a little less hard, the maximum strength then is obtained, while on rendering it a little softer or, as the workman would call it, 'moderately hard,' the maximum transverse strength is observed. With slightly softer cast iron the highest tensile

tests are obtained." There is a somewhat prevalent idea among founders that if considerable strength is required, a hard iron must be employed. Doubtless this is true in connection with crushing and transverse tests, but certainly not for tensile tests.

It can be shown that phosphorus up to 0.75 per cent does not affect the strength of this iron, but materially improves its soundness. It is advisable to do as little mixing in the cupola as is possible, and to use a pig iron directly designed for the castings required. This, of course, is an ideal way of working, which in many foundries would be impossible, but for very great strength and soundness in the castings, it is undoubtedly the best way.

Discussion of Foundry Pig Iron.

F. J. Cook, in opening the discussion, said that there was undoubtedly a big demand for the special pig iron referred to by Mr. Pilkington, and he expressed the hope that furnace operators would make an iron that could compete with refined iron. In regard to sulphur he said that this element is frequently wrongly blamed for defects in material. One point that must be remembered is that high sulphur iron must be melted and cast very hot. In regard to silicon he advised that if it does not exceed 1.25 per cent, iron of high strength could be obtained. The carbon content he considered the most important element, and he believes that the nearer it is to 3 per cent the better would be the results. If the phosphorus were limited to 1 per cent, and if the silicon were within 1¼ per cent, the benefit obtained through fluidity and homogeneity would counterbalance any weakening of the metal. He also emphasized the importance of physical conditions, which would produce a totally different result, even with metals of the same chemical content.

James Horne said that he usually mixes the metal in the cupola while additions are made to the molten metal in the ladle. The results from this practice have been exceedingly satisfactory. At his works from 20 to 50 tons of iron are melted daily in one cupola, and by making additions in the ladle, hot blast iron can be used for special products and a considerable saving is thereby effected.

E. Adamson, Sheffield, discussed the growing practice of mixing steel with iron, and he did not approve of this, as it frequently results in a lack of homogeneity. He did not agree with what is said about the value of the tensile test bar as against the transverse test bar, and as to sulphur he said that one of the strongest irons ever made was Finspong iron, a Swedish product, the sulphur content of which averaged from 0.14 to 0.16 per cent. He agreed with what was said in regard to the soundness or unsoundness of iron which was not necessarily dependent on the sulphur content, and he was also of the opinion that hard iron did not give the highest tensile strength.

Mr. Caddick, Bradford, said he was glad Mr. Pilkington was trying to provide special irons to obviate the necessity of remelting. As to sulphur, he said the difficulties were more probably due to the sulphur from the coke than from the iron. In reply, Mr. Pilkington said that he did not regard the cupola as a mixer in any way.

An interesting paper on "The Warping of Cast Irons" was read by R. R. McGowan, in which he discussed the warping of flat plates and castings of H-section. He was of the opinion that the only remedy to prevent the warping of large castings of these designs consists of cambering the pattern in the direction opposite to which the casting might warp.

Crystallization and Metallography.

Two exceedingly interesting papers on kindred subjects entitled "Metallography as an Aid to the Iron Founder," and "The Crystallization of Metals," were read, respectively, by John S. G. Primrose and Cecil H. Desch. Mr. Primrose pointed out the value of the microscope to the iron founder, and explained the preparation of samples used for microscopic investigation. Mr. Desch discussed the growth of crystals in castings, particularly in sections that are chilled.

R. Buchanan said that he understood that for electrical purposes 2 per cent of aluminum is added to cast iron to increase the electrical resistance. He was certain that blow-holes and globules in castings were the result of two different actions. He believed that the globule was extruded into the cavity and that it moved along the line of least resistance into the blow-hole. In regard to shot in castings, W. Mayer believed that these could be traced to the pouring of the metal from the ladle. Occasionally the iron is poured carelessly, causing it to splash and in addition damp sand in the bottom of the mold may cause this trouble. J. Horne believed that the existence of shot in castings was due entirely to the condition of the mold and the temperature of the metal when the casting is poured. In regard to sulphur he agreed with various speakers, and said that he had worked with steel mixtures and frequently had sulphur as high as 0.14 to 0.16 per cent. This high percentage of sulphur did not harden the castings to any extent and, furthermore, no trouble was experienced from blow-holes.

H. Jewson said that he had experienced considerable trouble with shot in castings and he found hard spots in castings, which destroyed all of the drills in the machine shop. This difficulty was experienced when using almost pure Scotch iron, but when the percentage of scrap in the mixture was increased the hard spots in the castings disappeared entirely.

In regard to the effect of aluminum on cast iron, J. S. G. Primrose said that it resembles that of silicon, and when used in small quantities it appears to hasten the rate of cooling. In regard to phosphorus he said that it should be remembered that this element is in iron not in the form of phosphorus, but as phosphide. The melting point of phosphorus is lower than that of cast iron, and it will melt more rapidly than the iron and will remain separated from it unless the metal is vigorously stirred.

A paper on "The Heat Treatment of Steel Castings" was presented by Prof. A. Campion, of the Glasgow and Western Scotland Technical college. He said that the most important points to be considered in determining a treatment necessary to obtain the best results in the handling of castings are as follows: The composition of the metal; the mass of the casting; the character of the casting; the casting temperature; the rate of cooling in the mold; the rate at which the material is heated in the annealing process; the length of time maintained at the annealing temperature; the rate of cooling from the annealing temperature, and the purpose for which the casting is required. The cooling, he added, must be as slow as possible until all chance of chilling has passed.

Other papers read included "Carbon Control in Cast Iron," by R. Buchanan, and "Art Expressed in Castings," by W. F. Bagnall. On interesting feature of the meeting was the presentation of an illuminated address to Frederick J. Cook, one of the past presidents of the association.

The iron ore found on the island of Corsica consists of a magnetic oxide of iron. It was formerly used in the production of a special grade of forge iron by smelting it and running the first fusion into running water, and afterwards mixing it with Elba ore and re-smelting. At present the deposit is not being worked, although it is located convenient for shipment by means of modern appliances.

Prevention of Accidents in Industrial Plants

Discussion of the Safeguarding of Tools and Equipment by the Members of the American Society of Mechanical Engineers

Many valuable suggestions for the safeguarding of tools in industrial establishments are contained in the discussion of John Calder's paper, entitled "The Mechanical Engineer and Prevention of Accidents," presented before the American Society of Mechanical Engineers. This paper was published in full in THE IRON TRADE REVIEW, volume 38, pages 309, 399 and 869.

In his discussion of this paper, Byron Cummings stated that the subject may be considered under three heads:

1.—Is it possible to reduce the number of industrial accidents without reducing the output?
2.—Will it pay employers to adopt methods of operation and safeguarding necessary to produce the desired result?
3.—What measures are best calculated to produce the desired result?

As to the possibility of preventing accidents the testimony of those who have adopted a systematic plan for that purpose warrants the opinion that a very large proportion of industrial accidents are preventable. Mr. Cummings stated that the Edison Electric Co. reported that the result of its efforts for accident prevention has been very satisfactory, while the United States Steel Corporation reported that preventive measures adopted have reduced the annual number of accidents by 50 per cent. Authorities, furthermore, admit that practically 50 per cent of the industrial accidents in this country are preventable.

Continuing, Mr. Cummings said in answer to the second question, "We think there can be but one answer and that is, it will. In considering this phase of the question we desire to call attention to the attitude of the courts with reference to claims for damages on account of industrial accidents. If the claimant can show that the accident was due to any unguarded machinery of any description, it is more than probable, if the injury was serious, that judgment in his favor will be rendered for an amount considerably in excess of $5,000, the usual limit in a liability policy for an accident to one person. Comparatively recent judgments have been rendered for $15,000 for injury that caused the loss of a leg; $25,000 for the loss of four fingers in a laundry accident; $30,000 for the loss of one hand and a part of the other in a printing office; $7,500 for the loss of one leg; $11,000 for the loss of five toes; $12,500 for the loss of sight; $17,500 for the loss of an arm, and $27,500 for the loss of an arm and a foot. We do not wish to be understood as claiming that as heavy judgments as these are usual, but they are becoming alarmingly frequent, their frequency being emphasized by the fact that during a period of three months, 31 personal injuries were decided by the Minnesota supreme court, confirming judgments of $144,926 and reversing judgment to the amount of only $6,600. The state of Minnesota is not alone in this matter. The laws of many of the leading manufacturing states are very similar and the decisions of the courts in any one state generally follow closely the decisions in others.

"When considering the advisability of installing safeguards, the employer should not overlook the fact that the absence of a guard may entail a heavy loss similar to those noted. He should also take note of the fact that the supreme court of Michigan has decided that the failure of a state factory inspector to recommend a guard is not a valid defense on account of an accident due to the absence of a guard. In considering the methods best calculated to prevent accidents, the use of caution notices should be mentioned. A type of

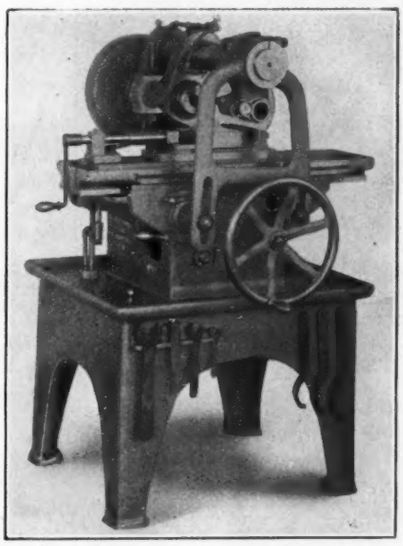


FIG. 2—MILLING MACHINE WITH GEARS COMPLETELY ENCASED

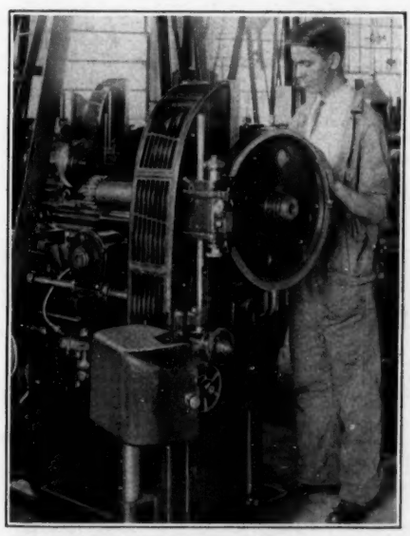


FIG. 1—APPRENTICE WITH SHORT SLEEVES. THE SWINGING COVER FOR THE GEARS IS CLOSED WHEN THE MACHINE IS IN OPERATION

FIG. 3—GEAR-CUTTING MACHINE WITH WOODEN GUARD TO PROTECT WORKMEN FROM THE GEARS

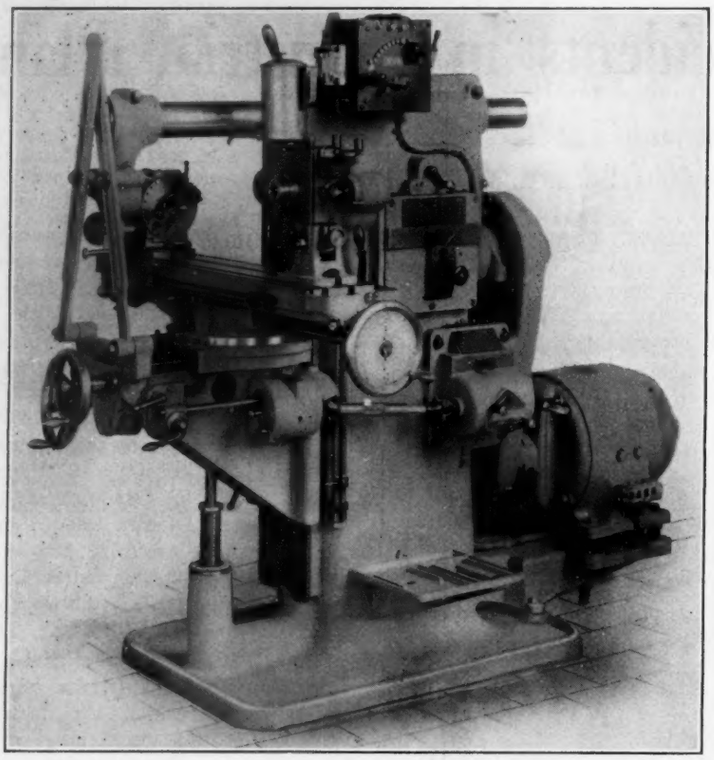


FIG. 4—MILLING MACHINE WITH GEARS INSIDE THE FRAME

notice coming in use which we believe will assist in preventing accidents consists in the statement of the employer that he desires to prevent accidents whenever possible, and requesting the co-operation of his employes and suggestions from them as to methods or appliances calculated to bring about the desired results."

Brown & Sharpe Safety Devices.

L. D. Burlingame, of the Brown & Sharpe Mfg. Co., Providence, R. I., contributed a number of views which illustrate specifically what has been done in the line of safeguards and sanitation by the Brown & Sharpe Mfg. Co. Fig. 5 shows a corner of the Brown & Sharpe Mfg. Co.'s polishing department, often one of the most unhealthful places to be found around the shop, this view illustrating the light, airy condition of the room, in addition to which exhaust pipes are connected with every polishing stand, thereby carrying the dust entirely out of the room. Guards are provided for the wheels, and chairs for the comfort of the workmen. At the end of each line of shafting is a rail to guard against a workman falling accidentally on the moving parts. Fig. 4 shows a constant speed drive milling machine with all gears enclosed, these being controlled and adjusted by levers from without. The chain from the motor is also fully guarded. Experience has shown that with machines on which the gears are not completely encased, many accidents are prevented by the wearing of short sleeves and their use is compulsory for apprentices in the Brown & Sharpe plant. Fig. 1 shows an apprentice wearing short sleeves and this view also illustrates the swinging cover for the gears which is closed when the machine is in operation. Fig. 2 shows a milling machine with the gears completely encased. The use of a temporary, wooden guard to protect exposed gears on an old design of gear-cutting machine is illustrated in Fig. 3. Fig. 6 is an interior view of the Brown & Sharpe Mfg. Co.'s foundry, which shows an overhead track for handling ladles and castings, which is provided with switches, so safeguarded that when they are open the truck is prevented from running off and falling on the workmen. In Fig. 7 is shown an elevator underneath the pouring spout of a cupola in the Brown & Sharpe foundry, which is lowered when ladles are being filled with molten iron and is elevated after the ladles have been removed, thereby closing the opening in the floor. When hand ladles are being filled the platform of the elevator is raised so that there will be no opening into which a workman might fall. This can also remain closed when the cupola is not in use.

Continuing, Mr. Burlingame said that it is the intention of the Brown & Sharpe works to give full consideration to all matters of health and safety and this policy has resulted in the adoption of many provisions working toward these ends. As an illustration, all stairways throughout the works are equipped with treads containing strips of soft metal to prevent slipping. Aside from providing specially favorable

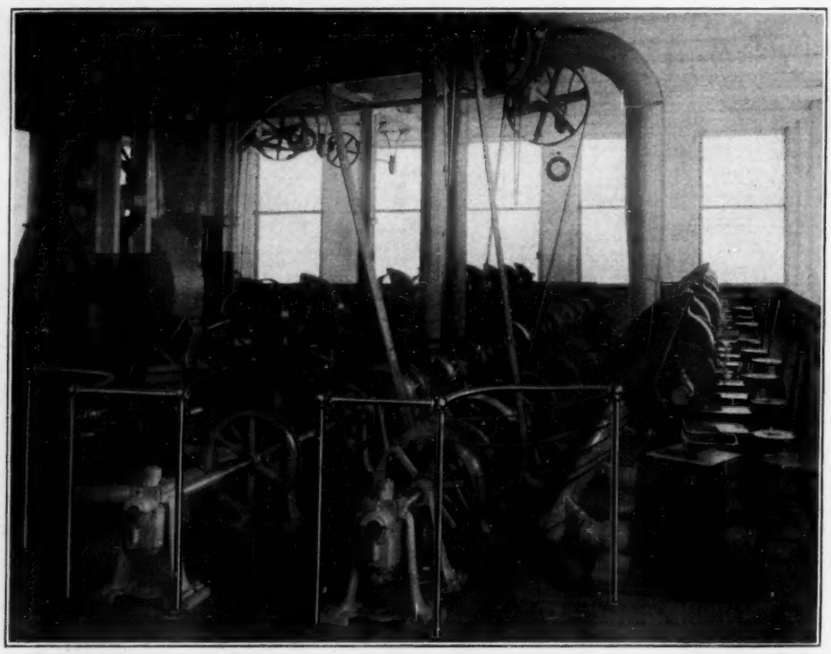


FIG. 5—POLISHING ROOM OF THE BROWN & SHARPE MFG. CO., SHOWING GUARDS FOR WHEELS, SAFETY RIMS, AND EXHAUST PIPES FOR CARRYING OFF THE DUST

conditions as to light and air, special precautions are taken against the spreading of such diseases as tuberculosis by maintaining cleanliness in all parts of the shop. The main effort is to reduce the number of injuries to a minimum and the last fatal accident in the machine shop of these works, now employing over 4,000 men, occurred about 25 years ago.

M. W. Alexander, a member of the Massachusetts state commission on compensation for industrial accidents, summed up the subject of accident prevention as follows:

"The problem of preventing accidents involves safety rules and regulations as well as safety appliances.

"Machine tools should be made safe in their operation rather than fool-proof.

"The problem of prevention of accidents will find its complete solution only if it is based on a campaign of education, both with the operatives who are to be protected and the engineers and employers, among whom a better knowledge of the subject and a strong public opinion in favor of safety conditions must be created. This, in turn will have a helpful effect upon the legislators of various states before whom bills for accident prevention and accident compensation are pending at the present time. These bills, when enacted, should be comprehensive and constructive in character and as far as it can be done, more or less uniform between the various states."

L. P. Alford said that the time to establish safeguards is when the work of designing is being done. The place to safeguard machinery, mechanism and structures, is on the drawing board. The time to safeguard a manufacturing process is when that process is being planned. "Turning to the field of the machine shop," continued Mr. Alford, "my experience has shown two prolific sources of accidents that are worthy of consideration. Some time ago I had occasion to analyze accidents that had taken place during two years in a large machine shop manufacturing light and medium work, automatic and semi-automatic machinery. The plant has a well-equipped emergency hospital and keeps an accurate record of every case treated. The average number of employes for the two years, under consideration, was 2,590. The number of cases treated during the two years, practically all injuries, but most of them of minor importance, was 5,208, or about one per employe per year. The number of serious injuries or accidents was 174, divided as follows:

Lacerations and contusions of fingers, hands, wrists and forearms	99
Lacerations and contusions of feet and legs	28
Lacerations and contusions of face and head	16
Miscellaneous	11
Received in drop forging shop	13
Received in iron foundry	7
Total	174

"Disregarding the accidents received in the drop forge shop and foundry, and computing the machine shop accidents in percentage, we find that 64 per cent were in the nature of accidents to the fingers, hands, wrists and forearms; 18 per cent to the feet and legs; 10 per cent to the face and head and 8 per cent to other parts of the body. Of the two most prolific sources of accident, one is the milling machine. Thirteen per cent of the accidents, under consideration, were from milling machines and in two cases amputations resulted. The greatest single source of accidents was from falling objects, which amounted to 24 per cent. Most of these were from castings and forgings that slipped from trucks while being transported or fell from piles of material or were dropped by the man injured."

H. Gardner said that the New York Central Lines, with which he is associated, have some 650 apprentice boys working in the several shops and it has been found to be profitable to inject in the educational courses, carefully written suggestions relating to the care of self as well as the care of the machines. It has been found that the instructor employed to train apprentices may be held largely responsible for accidents in the shop, and it may be considered distinctly a part of his duty to point out the danger and stimulate individual responsibility in properly caring for machines and tools.

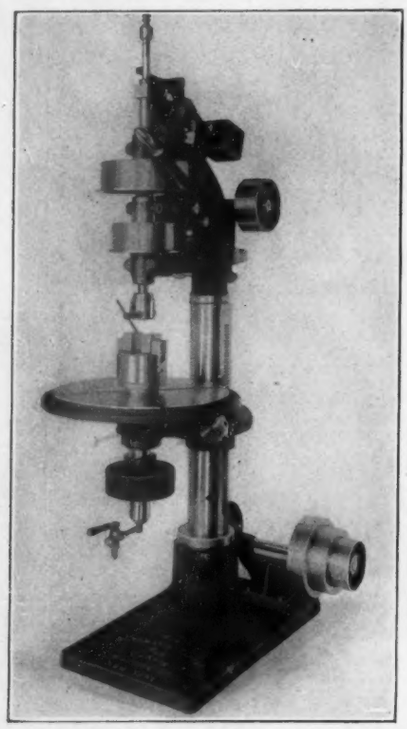
FIG. 6—SAFETY SWITCH IN THE FOUNDRY OF THE BROWN & SHARPE MFG. CO., WHICH PREVENTS THE TRUCK FROM RUNNING OFF AND FALLING ONTO THE WORKMEN WHEN THE SWITCH IS OPEN

FIG. 7—ELEVATOR UNDER POURING SPOUT OF CUPOLA, WHICH ALLOWS LARGE LADLES TO BE SAFELY FILLED AND PROVIDES FOR CLOSING THE OPENING IN THE FLOOR WHEN SMALL LADLES ARE BEING FILLED

New Automatic Tapping Machine

The Garvin Machine Co., New York City, has increased its line of tapping machines by the addition of two automatic tappers of new design, one of which is of greater capacity than its present No. 2 machine. This machine will tap from ¼ to ⅞-inch United States standard taps in cast iron and ¼ to ¾ inch in steel, and ½ inch pipe taps in cast iron and ⅜ inch pipe taps in steel. The other machine is a No. 2, back-geared, which has a capacity from ½ to 1¼-inch in cast iron and ½ to one inch in steel, and ¾ inch pipe taps in cast iron and ½ inch pipe taps in steel.

The machine, shown herewith, is a



GARVIN NO. 2, EXTRA CAPACITY, AUTOMATIC TAPPER

No. 2 of extra capacity with a special chucking arrangement mounted on a table, which consists of a Garvin, automatic, wrenchless, two-jaw chuck operated by compressed air. This feature adds greatly to the productive capacity of the machine, as there is no time lost in clamping and unclamping the parts being operated upon. By turning the air valve the chuck jaws open instantly and by turning the air valve in the opposite direction the jaws grip the work securely, which is then ready for the tap. The tap is started for a few threads by the hand lever, after which it requires no further attention. The tap after reaching the bottom of the hole trips off and returns automatically.

The spindle is fitted with two friction pulleys driven in opposite directions by one continuous belt and between these pulleys is placed a friction clutch keyed to the spindle. The friction clutch is connected with a lever at the right by a toggle arrangement, adjustable for the desired tension and no extra safety device to prevent the breaking of the taps is necessary. The tap is started by the lever at the right, and is tripped and reversed automatically at any point by an adjustable screw stop on the upper end of the spindle, striking the tripping lever on top of the machine. The spindle is balanced and is provided with a positive drive chuck for holding the taps. The table is surrounded by an oil groove and is adjustable up and down on the column to suit the work. Another feature of this tool is that it operates satisfactorily at high speeds and will trip and reverse after being set, even though the operator should continue to press down on the starting lever.

Interesting Multiple Drilling Operations

The use of a multiple drill for drilling holes in cutter plates for food choppers, is shown in the accompanying illustrations. This multiple drilling machine was built by the Langelier Mfg. Co., Providence, R. I., and it was equipped with six interchangeable heads, each of which was provided with a different layout of spindles and table fixtures for locating, holding and indexing the cutter plates during the process of drilling the holes. Five of the interchangeable drilling heads are shown on Fig. 2 and the sixth head is on the machine with a drilling steady jig attached. Each head is furnished with a four-leg cradle by which it is held when not in use and this also facilitates handling and their adjustment on the machine.

In Fig. 3 are shown six cutter plates drilled with these heads. Plate No. 1 contains 40 holes, required eight spindles and six operations; plate No. 2 contains 50 holes, required 10 spindles and five operations; plate No. 3 contains 78 holes, required 12 spindles and seven operations; plate No. 4 contains 80 holes, required 16 spindles and five operations; plate No. 5 contains 102 holes, required 17 spindles and six operations; plate No. 6 contains 144 holes, required 36 spindles and four operations. The distance between the holes in all of these plates is about one and one third drill diameters and for this reason it was considered impracticable to design a spindle for drilling steel that will drill all the holes in any of the plates in one operation. The rows of holes in these plates are arranged on either circular, polygonal or involute lines and considerable ingenuity is required to arrange a layout of drilling spindles to do the drilling in the least number of operations possible, particularly when there is an odd number of rows and holes.

The drilling heads are self-contained and are easily and quickly interchanged by the cradles previously described. The heads and spindle drivers are of phosphor-bronze and

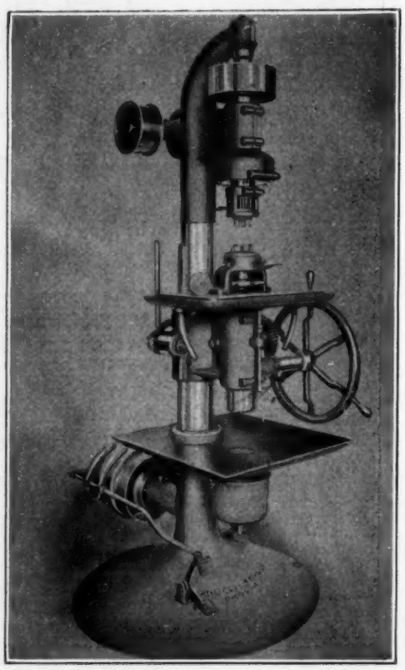


FIG. 1 — MULTIPLE DRILL FOR DRILLING CUTTER PLATES FOR FOOD CHOPPERS

the drilling spindle holes are bored to within a 0.0005 inch limit as to location. The spindles are of tool steel and are cut out of a solid bar. They are hardened, tempered and ground true to size and are fitted with pinch chucks for taking listed, straight-shank tongued, wire twist drills.

The steady jig is clamped to the lower end of the drill head and is adjustable vertically to allow the cutting end of the drills to project out only a sufficient distance to drill through the cutter plate. The steady jig is used on the four smaller heads, the only change required being the exchanging of the steel plate containing the jig bushings that are held in

place by screws in the lower opening of the steady jig. Other heads with layouts of spindles that can be arranged within a 5-inch circle, can be used on this machine. The drill head casing is removable and other casings may be fitted to take in larger heads in which the spindle layouts are not larger than an 11-inch circle. The main driving spindle is 1 5-16 inch in diameter and operates in loose, perforated bushings in both the upper and lower bearings.

Lubrication to all rapidly running parts connected to this spindle is effected through a capped brass oiler screwed into the upper end of the main spindle, the oil flowing down through a hole drilled the entire length of the main spindle to the drilling head. The oil in gravitating and by its centrifugal tendency lubricates the upper and lower bearings. A separate oil well is also provided for the upper bearings.

The raising table has a working surface 12½ x 20 inches and has an oil groove on all sides with an outlet on each end leading to the oil pan underneath. The table has a feed of 9 inches and is actuated by an 18-inch hand wheel through a pair of gears and pinion and rack. The leverage ratio of the table feed is 30 to 1. A stop screw is provided for drilling to the required depth. The distance from the lowest position of the table to the ends of the drills is 10 inches. The distance from the main spindle center of the table to the inner side of the column is 6⅞ inches. The table supporting arm is adjustable and can be clamped at any required height. The supporting arm is raised and lowered by means of the ratchet-pawl and rack-pinion method and is located at the left of the machine.

On the table in Fig. 1 is illustrated the cutter plate fixture. It is centralized with the drilling head and is fastened to the table by screws. The functions of this fixture are for locating, holding and indexing the cutter plates for the drilling operations. An expanding arbor projects above the top face of the indexing head of the fixture, which both centralizes and holds the cutter plate by means of the hole in its center. The cutter plate is seated on three short steel posts on the indexing head. The arbor is expanded by the hand wheel shown. An indexing head and expanding arbor are required for each plate. The indexing head of the fixture is moved by hand and is locked by a pin that is actuated by a small lever at the right.

Cutting oil is supplied to the drills by an oil pump. After being used the oil flows by gravity into the lower oil pan and is filtered twice before entering the oil supply tank. To the base of the machine are attached the tight and loose pulleys, the pump and the driving pulley for the quarter-turn belt. These pulleys run on a trunnion shaft driven into a hub on the base. The machine is started and stopped by a foot belt shifter. The main spindle and drill head spindles operate at 800 revolutions per minute. This machine is 6 feet 8 inches high and weighs about 1,750 pounds.

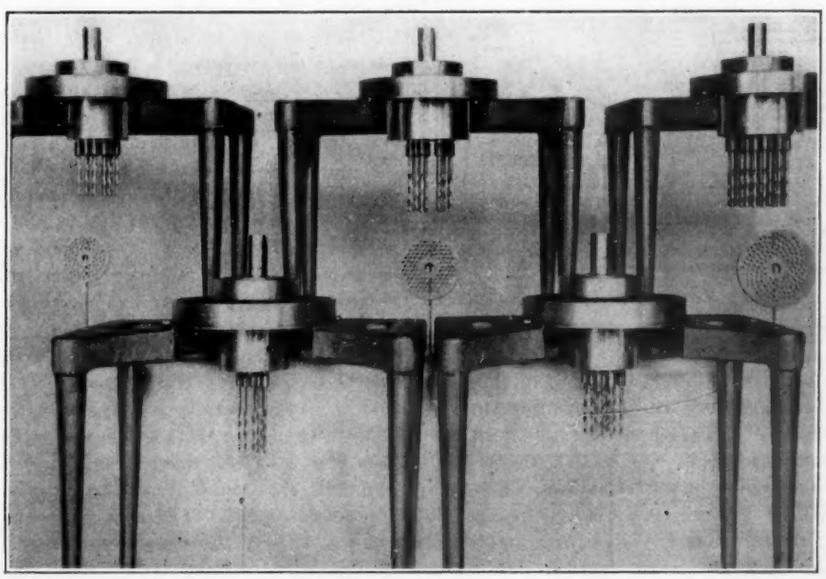


FIG. 2—FIVE OF THE INTERCHANGEABLE DRILLING HEADS

The Western Welding & Mfg. Co., Chicago, has increased its capital stock from $2,500 to $15,000.

October Meeting of A. S. M. E.

The October meeting of the American Society of Mechanical Engineers, New York City, will be confined to a discussion of the following, three general subjects:

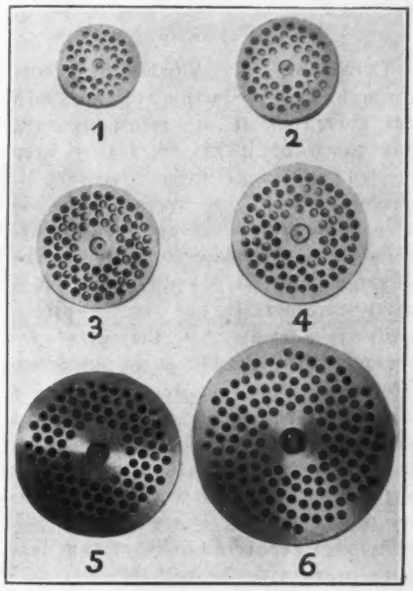


FIG. 3—CUTTER PLATES, SHOWING THE LARGE NUMBER OF HOLES DRILLED IN EACH

Machinery arrangement, covering the different methods of arranging machinery for manufacturing.

Artificial shop lighting, dealing with the advantages and disadvantages of diffused illumination, and the best type of lamps versus the advantage of individual lights at each machine.

Factory floors, giving the relative advantages and disadvantages of concrete floors, composition floors and wood floors.

The various discussions will be limited to 10 minutes and so far as possible the papers will be illustrated with lantern slides.

The following officers and directors were recently elected at the annual meeting of the Toledo Machine & Tool Co., Toledo, O.: President, E. P. Breckenridge; vice president and general manager, H. J. Hinde; secretary, L. J. Hinde; treasurer, Charles W. Greenig who, together with W. W. Edwards and E. C. Edwards constitute the board of directors. It was decided to perfect plans for extending the plant to care for an increased volume of business expected in the near future.

The Sintering of Fine Iron-Bearing Materials[1]

Description of a Machine for Sintering Flue Dust and Fine Ore to Permit of Their Recovery in the Blast Furnace

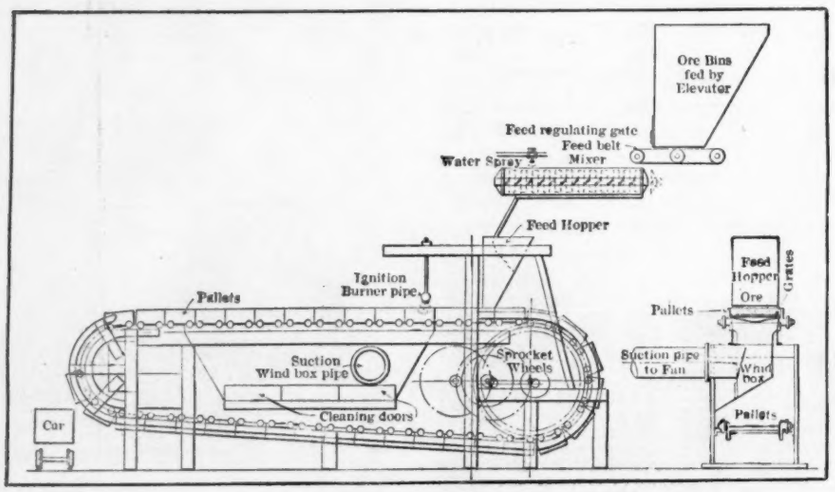
By James Gayley

The waste of valuable iron ore through the production of flue dust has increased at an enormous rate, and much of it has in reality been wasted as far as future recovery is concerned. Only in recent years has a possible future value been recognized, and the material stored. The increased use of Mesabi ores, which carry considerable fine ore, is principally responsible for the great increase in the producton of flue dust. The amount of fine material that is carried over depends on the fineness of the material and the velocity of the gases, and also to a very great extent on the regularity or irregularity of the working of the furnace. Attempts to recover a part of this loss have been made by recharging a portion of the production into the furnace, but as this material has been once carried out from the furnace, it is naturally in good shape to be carried out again.

A recent practice at some works, is to soak the flue dust thoroughly with water to give it more cohesiveness, but by many this is considered of doubtful advantage in the furnace, and the gases are in consequence heavily laden with moisture.

There are vast deposits of magnetic iron ores in the United States and Canada that are too low in iron for use at the present time, but which can be economically concentrated into very rich material; in many cases the fineness of crushing necessary to secure proper concentration has prevented their use except in extremely limited quantities. The reclamation of these ore bodies will add tremendously to the ore reserves of the United States, and this can best be done by a simple and efficient method of sintering.

Attention was directed especially to the Dwight and Lloyd system of sintering fine material in thin layers by internal combustion as promising to solve this problem most efficiently. The Dwight and Lloyd patents cover most of the simple forms of apparatus by which their process can conveniently be carried out, but the one that has given the best satisfaction in practice is known as the straight line conveyor type. As shown in the accompanying illustration, the machine consists essentially of a frame of structural steel supporting a sheet iron suction box, open at the top, over which may be pushed a train of conveyor elements called *pallets*, each of which has a floor composed of ordinary herring-bone grates, and which slides on its planed bottom, making an air tight joint with the horizontal top edges of the suction box on which it rests. The vertical surfaces of contact of the pallets with each other are also accurately planed, so that all joints are closed air tight when the train of pallets is being pushed along.



SIDE ELEVATION AND SECTION THROUGH DWIGHT & LLOYD SINTERING MACHINE, CONVEYOR TYPE

An exhaust fan, connected with the suction box by suitable piping, induces air currents to travel downward through the openings in the pallet grates and through the permeable material resting upon them. To trap the air properly, a smooth surface dead plate, somewhat longer than one pallet length, is bolted to each end of the suction box.

The movement of the train of pallets is accomplished by a pair of cast steel sprocket wheels, which serve the double purpose of lifting the pallets from the lower level and pushing them horizontally across the suction box. Each pallet is provided with four small roller wheels, which hang idle while the pallet is traveling over the suction box, but serve to carry the pallet on its return trip to the point of beginning. The return of the pallets is provided for by a pair of semi-circular discharge guides, terminating in a lower track way sloping downward to the base of the main sprocket wheels, and continuing as semi-circular guides around their peripheries. The pallets when they complete their journey across the suction box to the point of discharge have their wheels engaged by the curved guides, and when pushed still further, beyond the crest of the curve, break away from the train that is pushing them, and one by one, drop with a sharp blow on the upturned edge of the pallet just preceding. This shock serves to dislodge the cake of sinter from the surface of the grates, which now stand more or less vertical. The train of discharged pallets, in the guides and on the inclined lower track-way, crowds down by its own weight to the foot of the main sprocket wheel. During this period of travel, the pallets are upside down, which automatically tends to clean out the grate slots. The sprocket wheel lifts the train of pallets to the upper level and the cycle is completed.

We thus have a practically endless conveyor, any individual element of which can be removed for repairs and a new one substituted without stopping. The circuit may, if desired, be made a closed one, and this arrange-

[1]Presented before the Wilkesbarre meeting of the American Institute of Mining Engineers.

ment has been used under special conditions; but, in general, it is customary to leave an interval in the train of about one-and-a-half pallet lengths, which give just about the right amount of shock. The speed of horizontal travel of the pallets is adjustable to meet varying requirements, with the usual range from 7 to 30 inches of linear travel per minute.

Ore Charge.

The ore charge is automatically fed to the pallets in a thin layer, from 4 to 6 inches thick, from a simple funnel shaped hopper of the same width as the pallets, hung directly over them at a point between the main sprocket wheels and the suction box. There being no bottom to the hopper, the material rests directly on the pallets and is dragged out by their movement, the front edge of the hopper acting as a scraper to form a uniform layer of the proper thickness.

The stream of ore emerging from the hopper passes under an igniting device, which kindles the combustible elements in the charge on its top surface, and the combustion, thus started, is carried downward through the mass by the air currents, while the material is passing over the suction box. This ignition can be accomplished by almost any kind of flame that will give a quick, intense heat. The amount of heat required at this point of the operation is exceedingly small, and the cost of ignition correspondingly low. The wide variety of suitable means makes it possible to meet almost any local requirements.

Cycle of Operations.

The complete cycle of operations is as follows: A pallet being pushed outward tangentially from the top of the sprocket wheels, passes under the feed hopper, where it takes its load of ore in the form of a continuous, even layer of charge, say four inches thick. It next passes under the ignition, where the top surface is ignited, and at the same time the charge comes within the influence of the down draft induced by the exhaust fan through the suction box. The air currents promote rapid internal combustion of the fuel ingredients in the charge, and carry the action progressively downward from the top surface until it reaches the grates. This internally-developed heat and the chemical reactions consequent thereto, serve to bind the mass together until it becomes a coherent cake of cellular material, much resembling coke. The speed of the machine should be regulated so that the combustion and sintering operation is complete when a given pallet has reached the far end of the suction box, where the cake is discharged by the pallet dropping into the discharge guides and striking the one just preceding it. The empty pallets then gradually crowd back to the face of the sprocket wheels, are slowly raised to the upper track, take their load, and make a new trip.

This type of machine is now made in two standard sizes, one having a suction box 30 inches wide by 150 inches long and a nominal rated capacity of 50 tons per day; and the other, with two suction boxes in tandem, having a width of 42 inches and an aggregate length of 264 inches, and having a nominal rated tonnage of 100 tons per day on average material. The area of the suction box is the measure of the capacity of the machine, and the suction fan must be so proportioned as to maintain a vacuum of about six ounces when handling approximately 4,000 cubic feet of gases per minute, this being the average volume from each 100-ton unit.

Such a fan, with short and straight pipes and running at about 850 revolutions per minute, requires from 25 to 35 horsepower. The sintering machine itself consumes about 1.5 horsepower, but 10 horsepower is usually allowed for machine, conveyors, feeds, and mixers, in fact, everything except the fan.

Each sintering unit is self-contained and occupies space approximately as follows: Thirty by 150-inch machine, so-called 50-ton unit, length over all, 27 feet; width, seven feet; height of top of hopper above foundation, 11 feet, four inches; units in battery may be set with 11-foot centers; weight of complete machine, approximately, 16 tons.

The grates are of the simple herring-bone pattern and are made of cast iron. The heat developed in the operation being internal to the ore mass, does not cause the pallets to become very hot, and there is but little damage from this source. Moreover, on account of the extremely slow movement of the mechanism, the wear and tear is very small. In one plant which was in steady operation for two years, the average cost of supplies and repairs was from two to four cents per ton; five cents per ton will easily cover all ordinary contingencies.

A number of iron-bearing materials, of different kinds, were treated on this machine, and in each case with satisfactory results. Among them were two shipments of iron flue dust, which were widely different as to physical condition. One was the usual

Analyses of Sintered Material.

Sample.	Per cent. Fe.	Per cent. P.	Per cent. Mn.	Per cent. SiO_2	Per cent. Al_2O_3.	Per cent. CaO.	Per cent. MgO.	Per cent. Carbon.
No. 1 flue dust.....	46.06	0.194	0.54	9.68	3.00	1.80	0.80	17.00
Sintered product ..	57.90	0.260	0.66	12.30	3.95	2.00	1.20	0.60
No. 2 flue dust	46.43	0.123	0.66	9.88	2.72	2.00	1.44	13.75
Sintered product.....	58.84	0.150	0.75	11.81	3.05	2.50	1.71	2.10
Magnetic concentrates	57.52	0.090	0.56	9.70	3.43	0.35	0.10	0.00
Sintered product ..	59.65	0.110	0.60	10.60	4.00	0.30	6.10	0.00

Sulphur.

	Per cent.
Magnetic concentrates with 7 per cent of coal.....	1.17
Sintered concentrates	0.006

Sieve Test.

Sieve.	No. 1 Flue dust, per cent.	No. 2 Flue dust, per cent.	Magnetic concentrates, per cent.
On 10-mesh	14.0	4.0	28.0
On 20-mesh	31.0	1.0	44.0
On 40-mesh	31.0	6.0	15.0
On 60-mesh	14.0	4.0	7.0
.....	3.0	15.0	2.0
On 100-mesh	3.0	20.0	1.0
Through 100-mesh	4.0	50.0	3.0

	Ferrous iron, per cent.	Ferric iron, per cent.	Total iron, per cent.
Cuban (Mayari) ore dried at 212 degrees Fahr.	0.63	47.80	48.43
Sintered product	9.67	44.30	53.97

Sieve Test, Mayari Ore, Sintered.

	Per cent.
On 2-mesh	53.88
On 4-mesh	16.33
On 8-mesh	23.35
On 20-mesh	4.33
On 40-mesh	1.12
On 60-mesh	0.51
On 80-mesh	0.02
On 100-mesh	0.14
Through 100-mesh	0.32

character of flue dust, which I shall designate as No. 1, while the other, No. 2, was extremely fine, 50 per cent of it passing through a 100-mesh sieve; but the sintered product of each was not distinguishable, and both were ideal in size and structure for the blast furnace. There were no large and compact masses like the product from the briquetting process, nor was the material rolled together in balls from the size of a pea to that of a cannon ball, as in the revolving kiln; but, instead, the individual pieces were cellular, like open pumice stone or porous cinder, which helps materially towards economic reduction in the furnace, as a large area of contact is provided between the ore and gases.

In the Dwight and Lloyd method of sintering with a bed of material that is not disturbed or agitated during the sintering operation, the sintered product is all so cellular that a large area of contact is provided; and its reducibility is very great compared with the more massive agglomerated products, just as coke, by reason of its cellular spaces, burns more readily than anthracite coal, which can have only a superficial combustion.

Although the product from the Dwight and Lloyd furnace in sintering flue dust is of a desirable size for blast furnace use, yet a fair proportion of the product would be suitable for use in the open-hearth furnace.

Catalan Process.

In sintering materials which do not contain any heat-producing substances, recourse can be had to the practice of the ancient Catalan or Corsican process, where carbon fuel was mixed with the ore, and which, in its first stage, was an agglutinizing process. In order to test the machine on this class of work, some magnetic concentrates were treated, after being mixed with 7 per cent of coal, and the product was found to be satisfactory in every particular. The material was sintered into a coherent mass, but so open and cellular in structure that the mass, in discharging from the pallets, broke into very convenient sizes for the furnace, and without any fines. As the mixture contained less carbon than the flue dust, it was sintered much more quickly. While in the test on flue dust, a travel of 12 feet in the grate movement was required to complete the sintering, the concentrates were completed in a travel of six feet. This represents, in the treatment of magnetic concentrates, a greatly increased capacity for the machine.

Some Cuban (Mayari) iron ore was also treated on the machine after being mixed with 7.5 per cent of coal and coke in alternate tests, and afterwards the ore was mixed with 10 per cent of coal in one test and 10 per cent of coke in another; but the use of 10 per cent of fuel did not show any advantage over 7.5 per cent nor were the results from coke any better than from coal. The sintered product resembled closely that obtained from the flue dust; there was very little fine material, and, in fact, no fines that would require re-treatment. The sintered material was irregular in shape, with an average size of a hickory nut. The analyses of the material treated are given in the accompanying table:

Physical Structure of Sintered Product.

The physical structure of the sintered product varies under different conditions. Where there is a large amount of moisture and carbonaceous matter present, a corresponding shrinkage within the mass must take place as the volatile constituents are driven out, and this may cause the cake of sinter, as a whole, to break up into irregular-shaped masses or fingers. The smallest of these pieces, however, have a cellular structure like pop-corn, which is peculiarly desirable for the blast furnace. In the case of magnetite concentrates, where there is less internal shrinkage, the sinter comes off in slabs having an open structure.

The Cuban ore being the finest, the sinter was of a smaller average size than the magnetic concentrates, which were coarser and did not shrink so much in sintering. The flue dust being coarser than the Cuban ore, produced a sinter about midway in size between the flue dust and the concentrates. The cohesiveness of the material is inversely as the amount of internal shrinking of the mass during sintering.

Advantages of Process.

Among the advantages observed in the Dwight and Lloyd process, the following may be noted:

1.—The feeding of material to and discharge from the machine, without interfering with the continuity of the process.

2.—The down draft of air exerts pressure in the direction of the gravity of the mass, and prevents the displacement of particles.

3.—The down draft of air intensifies the combustion at the beginning of the sintering, and towards the end of it operates efficiently to cool the mass.

4.—The sintering operation is under constant observation during the whole period, and permits of rapid changes in adjustment.

5.—The process can be stopped at any time to make any changes without interfering with or clogging any part of the apparatus.

6.—The duration and activity of treatment are subject to ready control.

7.—The adjustability of the process makes it adaptable to treating any class of fine material, without modifying the construction.

8.—The withdrawing of the gases by a fan provides a heating medium for drying ores carrying a surplus of moisture.

9.—There is no nodulizing of the sintered material, and the cellular structure, which is so important, is preserved.

10.—The product is ideal in structure for use in the blast furnace, on account of the large area of contact provided, and its adaptability in size for distribution in and passage through the furnace.

Pig Iron Producing Economies.

With the large productive capacity that has been built up in the iron and steel industry in the United States, matters of economy in production are now engaging the attention of the industry to a much greater extent than in the past. The most promising field for effecting economies therein, is in the manufacture of the basic metal—pig iron, in which several avenues are still open for effecting great reductions in cost. A very important field to operate in, is the treatment of the fine ores before being charged into the furnace. Twenty-five years ago the practice of charging large lumps of ore and stone and large pieces of fuel was discontinued, and the crusher came into general use for reducing these materials to a more uniform size, and with beneficial results in the furnace. The increasing use of the Mesabi ores has led to the other extreme in practice, so that the fine ores, and the fine dust resulting from their use, require an agglomerating process, in order to return to the ideal condition of material as it was *sized* by the crusher.

Use of Fine Material.

The use of very fine materials in the blast furnace has not been successfully worked out, and probably never will be in the modern blast furnace, and no time should be lost in adopting efficient and economical methods for treating these materials to make their use successful. The practice of re-charging the flue dust as such, is considered by many a ques-

tionable one. Some furnacemen hold the opinion that, while the re-charged flue dust is retained in large part in the blast furnace, it is nevertheless detrimental, as it tends to collect on the bosh walls, and causes frequent slips and irregular working. Because so much ore is saved from the waste, it does not follow that it represents a saving in cost of pig iron. The screening of coke to eliminate the fine pieces is certainly beneficial, but it does not seem logical to re-charge the same kind of material when intermixed with fine ore, as in flue dust, into the furnace.

The actual amount of objectionable *fines* in the Mesabi ores represents only a small percentage; but its pernicious influence is out of all proportion to the amount involved. At some furnaces in England, where the fine material is screened from the ores and sintered, very beneficial results have been obtained. When the screening of the fine material from the coke was first advocated, it was objected to by many, as representing a waste of fuel, although of poorer quality, that might have some value in the furnace; but now the economic value of the practice is fully appreciated. The same practice applies to ores, and sintering the fine material to prevent waste, promises as great or even greater benefits.

Briquetting Metal Borings for Foundry Use[1]

Description of a German Process Which Employs a Powerful Hydraulic Press—Semi-Steel Briquettes

By Richard Moldenke

One of the latest developments in the metal industry in connection with the utilization of metallic waste, is the process of briquetting under enormous pressure without the use of a binding medium. The process was originated by Arpad Ronay, of Buda Pesth, who conceived the idea of imitating nature as closely as possible in the production of rock deposits. He employed extreme pressure, allowing a sufficient time to permit the individual particles to come into intimate contact, excluding thereby spaces filled with air or water which would have a tendency to weaken the bond. When metal particles, as well as ores or other fine materials, are subjected to ordinary pressures, sufficient air is entrained to cause trouble when the briquettes are heated; the air expands, thereby breaking the briquette and resulting in excessive loss and difficulties incident to the use of the fine material, untreated.

When the writer was first asked to investigate the process professionally for American interests and before going to Europe, he melted one of the German cast iron boring briquettes in his cupola and left the breast open so that by means of an iron bar, contact could be had with the briquette, from time to time, as it melted. It was found that the briquetted borings melted similar to pig iron and the briquette maintained its shape until the final softening and dropping to the bottom. A visit to the several briquetting installations in Europe showed this industry to be in a flourishing condition and ten plants are now in operation. These include two at Berlin one each at Chemnitz, Stolberg, Cassel and one at the Imperial navy yard at Kiel, Germany. In addition there are plants in Vienna, Buda Pesth, Milan and at Winterthur, Switzerland. In this country the rights to the Ronay process for handling metal waste have been acquired by the Metal Briquetting Co., New York City.

The process may be briefly described as follows: Cast iron, steel, brass, bronze, aluminum, copper chips, borings, filings and metallic slimes after drying, coal, graphite, ore, flue dust, etc., can be satisfactorily briquetted. Borings, before being dumped into the hopper above the press, have the dust and dirt removed by an exhaust fan. This operation likewise removes rust which has become loosened by the rubbing of the particles against each other during transit and the quality of the briquette is thereby greatly inproved. In the case of steel turnings, these are passed through a set of disintegrating rolls to reduce their bulk. After cleaning, the borings are passed over a magnetic separator to remove any brass from the iron. The cleaned and separated borings are then delivered to the feed hopper of the press shown in Fig. 1. The bunker is filled with borings by a bucket

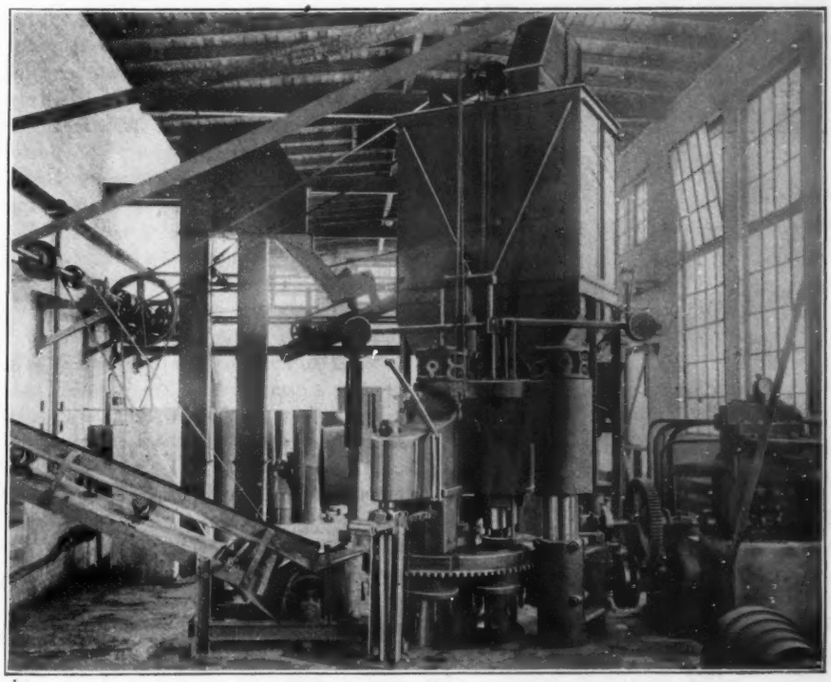


FIG. 1—LARGE PRESS FOR BRIQUETTING BORINGS

[1]Abstract of a paper presented at the Pittsburg convention of the American Foundrymen's Association.

elevator and flow by gravity into the plunger of the press and then into the die. As the plunger descends the borings receive their first compression. The air is forced out as the borings are compressed, the separate particles curling into each other. The partially completed briquette in the die is then carried by the revolving table to the next stop where plungers, both from above and below, apply pressures of 35,000 pounds per square inch. The die containing the briquette is free to move up or down at this point, permitting the compressed material freedom to adjust itself to a uniformly distributed force. When the pressure is released, the revolving table makes another turn and the die with the finished briquette, which is slightly conical in shape, is passed under another plunger which forces the briquette out of the die and onto a conveyor by which it is carried away from the machine. All of these movements are entirely automatic, the operation of the press being in charge of one man, a second carrying away the briquettes, while a third has charge of filling the hopper with borings. The briquettes become quite hot during this operation.

In Fig. 1 is shown a large press installed at the Chemnitz plant. This has a capacity of six tons per hour and the cost of briquetting, exclusive of royalty, has been reduced to about 50 cents per ton. The cost of a press of this size with conveying apparatus and all accessories, is about $35,000. Fig. 2 shows a large press under construction at the locomotive works of A. Borsig, Berlin. This press is practically completed and ready for shipment and is one of the latest types. A pile of cast iron borings, 6¼ inches in diameter, 7 inches high, and weighing 38 pounds each, are shown in Fig. 3, while in Fig. 4 are illustrated a pile of wrought iron chip briquettes. These briquettes, however, are no longer made in this form.

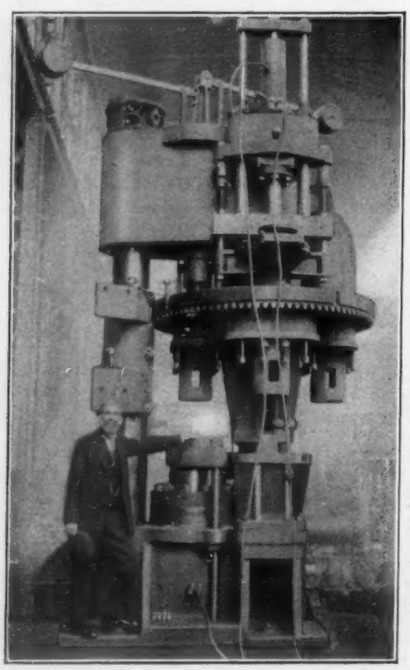


FIG. 2—LARGE BRIQUETTING PRESS ASSEMBLED IN THE MAKER'S WORKS

FIG. 3—PILE OF CAST IRON BRIQUETTES WEIGHING 38 POUNDS EACH

Use of Briquettes in the Cupola.

The use of briquettes in the cupola is similar to the use of pig iron and heavy scrap, and although the briquettes, in spite of the enormous pressure to which they are subjected, are not as solid as pig iron, melting somewhat more rapidly, their handy shape and weight makes them an ideal cupola charging and melting material. The losses resulting from charging borings directly into the cupola amount as high as 50 per cent of their weight and when they are boxed, charged in cans or melted in tubes, the melting loss varies between 8 and 12 per cent and there is always danger that the cans or tubes will open, discharging the loose borings over the coke bed. In the case of briquettes as in other melting tests, to obtain figures on the process, much depends upon how the melting is done. In melting pig iron with only ordinary precautions, the melting loss may amount to 3 per cent and even more, but when care has been taken in the melting process, the loss has been reduced as low as 1 per cent, and when sandless pig iron was used the losses have been as low as 0.3 per cent. When running straight heats of briquettes, the melting loss with practice that gave 2.5 to 3 per cent loss for straight pig iron, resulted in a loss of 8 to 10 per cent for the briquettes. With careful practice, however, this melting loss can be easily reduced to 6 per cent. When using from 10 to 80 per cent of briquettes, the remainder of the charge being pig iron, the melting loss of the heat will be about normal. In one heat containing 80 per cent of briquettes and 20 per cent of pig iron, the actual melting loss was only 3.5 per cent.

Metallurgical Changes.

There are some metallurgical changes in melting borings, whether loose or briquetted, which must be considered. The silicon will be lowered considerably more than is ordinarily the case, the total carbon will be decreased, while the sulphur will increase about twice the ordinary amount. This, of course, is only noticeable when the heat consists entirely of briquettes. When briquettes, however, form only a part of the charge, only slight metallurgical changes are noticeable and castings such as cylinders for gas and steam engines, etc., show a marked improvement when briquettes are used in the charges. A reduction in the total carbon and silicon corresponds to a steel addition to the charge and this accounts for the improvement in these castings. The slight increase in sulphur imparts a structure more finely granular and gives a better wearing surface for cylinder work. Inasmuch as the large locomotive works on the continent are adopting the use of briquettes, it is evident that the use of borings is not a detriment. In Germany these briquettes are actually sold at pig iron prices and at the Borsig Locomotive Works.

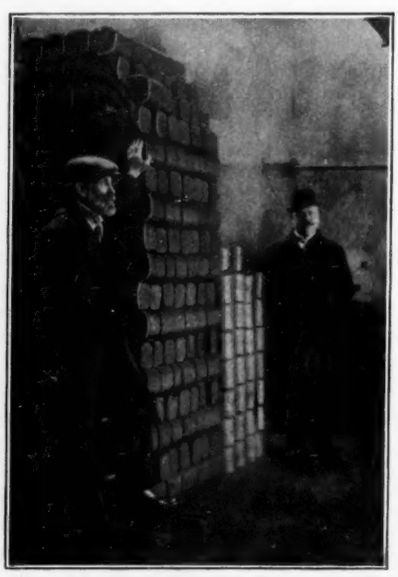


FIG. 4—PILE OF WROUGHT IRON CHIP BRIQUETTES

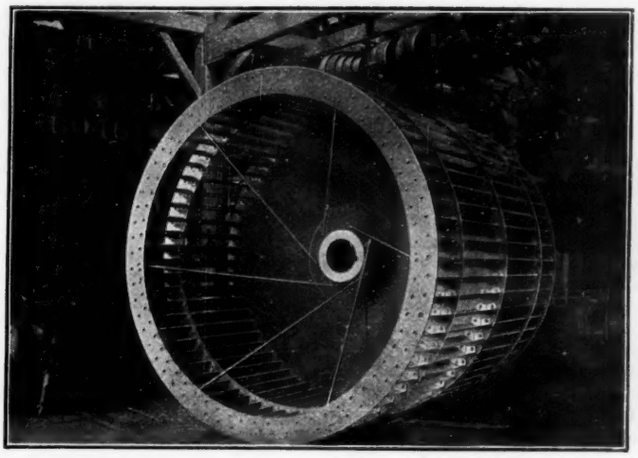


FIG. 1—LARGE FAN WHEEL OR IMPELLER WHICH IS 12½ FEET IN DIAMETER

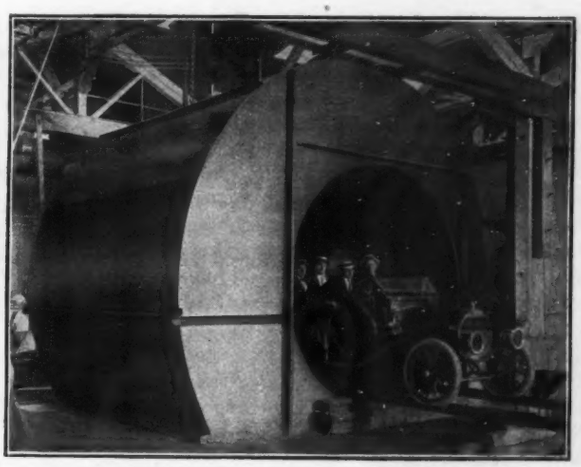


FIG. 2—LARGE VENTILATING FAN, SHOWING AN AUTOMOBILE IN ONE OF THE INLETS

the regular charges for steam and gas engine cylinders, refrigerating machinery castings and castings for hydraulic machinery, air compressors, superheated steam and steam turbine apparatus, contain 40 per cent of briquettes.

Briquettes for Semi-Steel.

Perhaps one of the most interesting applications of the briquetting process involves the mixing of steel with the cast iron borings. This affords an excellent method of charging steel into the cupola without burning a portion of the steel before melting. The contact of a low carbon with a high carbon material means the melting down of this combination with an average carbon content. In place, therefore, of adding 40 per cent of steel scrap to the charge and in melting to obtain, perhaps, a reduction in carbon in the castings corresponding to one-half of this as a result, either much less steel need be added to the borings for briquetting, or if the full amount is added, a much stronger metal is obtained. The foundryman, therefore, is in position to utilize any steel scrap he may produce and, in addition, he may order his briquettes with the exact proportion of steel he wants them to contain. For air or open-hearth furnace work, all-steel briquettes give better results than heavy steel scrap. They not only melt faster, thereby shortening the heat considerably, but their uniform size and shape permits them to be piled in the furnace, allowing a better circulation of the gases than can be obtained by the use of irregular and large pieces of scrap. The melting losses of briquetted brass, bronze, aluminum, white metal and other nonferrous borings are about the same as the solid metal when melted. The softer metals and alloys are pressed together so closely, that for all practical purposes, they constitute sound pieces of metal. The finer the scrap the better the briquette and hence a magnificent field has been opened for the economical recovery of these expensive metals in the foundry.

Large Ventilating Fans

The Pennsylvania Railroad is installing a large ventilating plant in one of its tunnels under the city of Baltimore. This tunnel is 4,963 feet long with a cross-sectional area of 432 square feet. The crown of the tunnel is 19 feet high above the rails at the portals and the cubic feet of space from end to end amounts to 2,150,000. Above one of the portals is a fan room, 30 x 36 feet and 16½ feet high. The floor of this fan room is about 28 feet above the tracks. The fan room is equipped with two "Sirocco" fans, built by the American Blower Co., Detroit, each 15½ feet high, 18 feet long and 14 feet wide. In Figs. 1 and 2 the two fans are shown under construction in the shops of the American Blower Co. An automobile is being driven through one of the inlets of the fan in Fig. 2. This inlet is 11½ feet in diameter. Both fans have outlets, 8½ x 14 feet, which discharge through the floor into a chamber surrounding the upper part of the tunnel. The air is discharged from the chamber through a long, tapering nozzle carried around the entire perimeter of the tunnel, above the tracks, in such a way as to direct the flow of air forward.

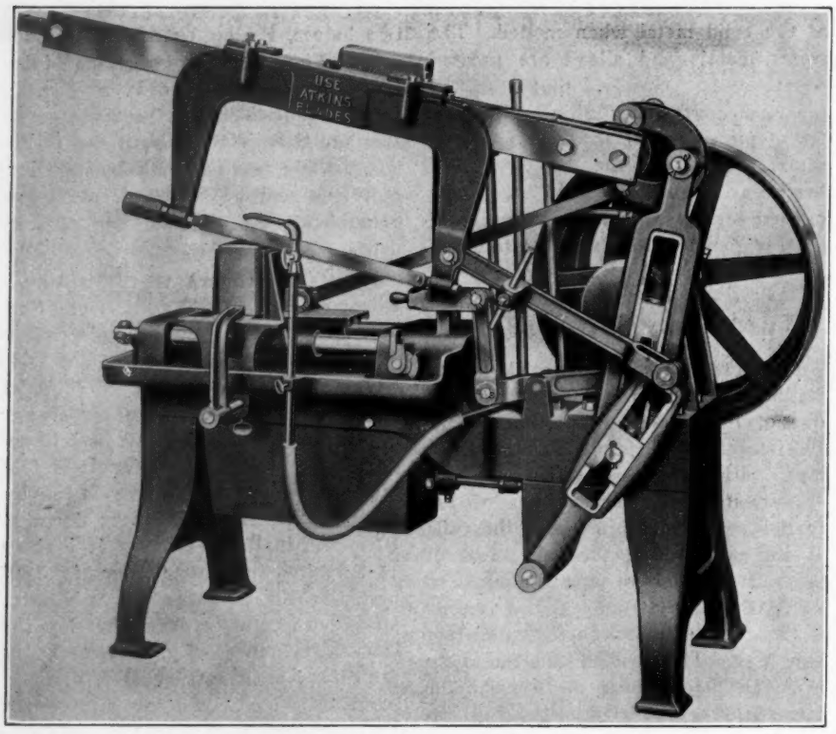
The fan wheel or impeller is 12½ feet in diameter and width with a division plate, dividing the width into two halves, the air entering from both sides. The relative proportions of this fan wheel is illustrated in Fig. 1, where comparison can be made of its size and that of the freight car at the left. While two fans will be installed, only one will be operated, the other being held in reserve in case of accident.

It was determined that this tunnel would require 450,000 cubic feet of air per minute. This volume will produce a velocity through the tunnel of 1,040 feet per minute or a rate of 12 miles per hour and will give an air change in 4¾ minutes. The shaft which supports one of these fan wheels is 13½ inches in diameter where it passes through the hub and tapers down to 10 inches in the bearings. It is about 13 feet long and weighs nearly 8,000 pounds. To discharge the volume of air required and to overcome the frictional resistance of the tunnel, the fan wheel must revolve at a speed of over 104 revolutions per minute and the speed of the tips of the fan blades will be approximately 46½ miles per hour; 190 horsepower will be required to operate the fan.

The Hillen Mfg. Co., Louisville, Kp., is being organized for the operation of a brass foundry, which will manufacture plumbers' supplies and carry on a general brass-working business. Geo. F. Hillen, who resigned several months ago as superintendent of the brass department at the local plant of the Standard Sanitary Mfg. Co., is the chief mover in the new enterprise. A building has been secured at 308 East Green street, and a considerable amount of equipment, including monitors, molding machines, machine tools, etc., has already been purchased.

Power Hack Saw Machine

A high speed power hack saw machine, built by C. E. Atkins & Co., Indianapolis, which employs the full stroke of the blade, is shown in the accompanying illustration. The machine is provided with an automatic adjustment to any size of stroke to be cut, the steel bar connecting the vise jaw with the link hanger automatically changing the stroke of the saw frame to correspond with the dimensions of the stock. The use of the entire saw blade on each stroke effects great economies in the cost of blades. The machine is also equipped with a raising device which automatically lifts the blade from the work during the reverse stroke, thus avoiding unnecessary wear on the saw teeth and greatly increasing their life. The saw may be easily lifted to any desired angle and will be automatically held in that position. The draw cut adds to the smoothness of the operation of the machine. The base is of the cabinet type, and being extra heavy, eliminates vibration. The saw frame is provided with a long compensating bearing which also insures accuracy of cut. To insure the full efficiency of the machine in all sizes and classes of stock, it is provided with a two-speed pulley. This enables the user to regulate the speed to suit the requirements. A variation of 30 strokes per minute is possible and may be used on large or small, hard or soft material, as desired. A special attachment also provides for the automatic stopping of the saw at any desired depth of cut.



HIGH SPEED POWER HACK SAW MACHINE

New Catalogs

STORAGE BATTERIES.—A bulletin issued by the Gould Storage Battery Co., 341 Fifth avenue, New York, describes the Gould batteries and allied regulating apparatus by means of which current from the Detroit Edison Co.'s plant is utilized in the new Detroit river tunnel.

HYDRAULIC PUMPS.—A new catalog issued by the Watson-Stillman Co., 50 Church street, New York, is devoted to that company's line of hydraulic pumps and several new types are described. The catalog contains much information of value to hydraulic engineers.

MACHINE TOOLS.—The Gisholt Machine Co., Madison, Wis., in a 32-page booklet, illustrates and briefly describes its line of turret lathes, boring mills and tool grinders. The wide range of work which may be finished on these lathes is shown in sections of varying sizes and form. Illustrations of vertical and horizontal boring mills, as well as a universal tool grinder, are included.

STEAM HEATING AND AIR WASHING SYSTEM.—Warren Webster & Co., Camden, N. J., have issued two booklets devoted to their line of modulation steam heating and air washing apparatus. In them are described the two systems of this kind which have been installed by that concern in the new building of the Boston Safe Deposit & Trust Co., Boston, and in the Boston City Hospital.

HIGH SPEED TAPS AND DIES. — A price list and catalog of high speed taps and dies, manufactured by Winter Bros., Wrentham, Mass., has been issued by the Simplex Tool & Supply Co., Boston, exclusive sales agents of these tools. Among the tools illustrated are high speed machinists' hand taps, machine or nut taps, high speed Tapper taps, pipe taps, machine screw taps, spring screw threading dies, etc.

ALTERNATING CURRENT GENERATORS.—A bulletin recently issued by the Triumph Electric Co., Cincinnati, is devoted to that company's line of engine and water wheel type, alternating current generators. These alternators are built in the following voltages: 240, 480, 600 and 2,400; for 25 or 60 cycles, and for single, two or three-phase circuits. All details of construction and adaptations of these machines are thoroughly covered in the bulletin.

COMPOUND CORLISS ENGINES.—Allis-Chalmers Co., Milwaukee, has issued a bulletin devoted to its line of compound Corliss engines. These engines are installed in power plants, pumping stations, blast furnace and rolling mill plants, foundries, machine shops and industrial plants in general. The great advantage claimed for them is the great degree of economy attendant upon their operation. The bulletin contains much information of value to prospective buyers of engines.

HEAVY LATHES. — The Niles-Bement-Pond Co., Cincinnati, has distributed a new catalog devoted to heavy lathes. These include 24 to 36-inch swing, double back-geared engine lathes; 36-inch swing, triple-geared engine lathes; 42 to 72-inch swing, geared head engine lathes; 84-inch swing, and over, engine lathes; and 53 to 108-inch swing, gun lathes. All these machines are furnished for either belt or motor drive. The catalog, which is 9 x 12 inches, contains a number of handsome illustrations.

STEAM SEPARATOR. — The Griscom-Spencer Co., 90 West street, New York, in a recently issued bulletin, describes its Stratton type of steam separator. In the employment of this apparatus, steam is separated from water by the centrifugal force imparted to the mixture when it enters the separator. This separator is intended to provide against foaming boilers, an unnecessarily high water line in the boiler and the accumulation of condensed water in pipe lines.

CAST IRON HEATERS AND RECEIVERS.—Cookson cast iron heaters and receivers with cut-out valves are described in a catalog issued by the Bates Machine Co., Joliet, Ill. This apparatus serves as a purifier, filter, oil separator and condensation receiver and possesses the special feature of being able to purify all the exhaust steam from the engines and auxiliaries. The new type of oil separator on this heater is provided with cut-out valves that permit cleaning of the heater body wi hout interfering with the functions of the oil separator.

ALTERNATING CURRENT GENERATORS.—In a recently issued bulletin, the Allis-Chalmers Co., Milwaukee, describes its line of alternating current generators of the engine and fly wheel types, for direct connection to steam engines. These alternators are manufactured in the larger units and are designed to furnish current for motive power as well as for lighting purposes. They are of the revolving field type while the armature coils are stationary and hence are not subjected to mechanical vibrations or centrifugal force. The fly wheel type alternators are constructed with the field poles mounted on the face of the engine fly wheel, thus serving the double purpose of fly wheel and rotor spider. In the standard engine type alternators, the engine fly wheel, which is mounted on the shaft at the side of the generator, supplies the additional fly wheel effect that is needed.

IRON AND STEEL SECURITIES

Securities on the New York stock exchange again broke severely last week, but a recovery followed in the closing days. The most active issues were United States Steel, Union Pacific and Reading.

On Monday the market rallied and closed near the best; labor troubles in England extended to the railroads and London was a large buyer of American securities. Tuesday, the market was dull, the list being irregular with a rather heavy tone; the grain markets were lower. Wednesday's market was weak, many stocks declining to the lowest prices for more than a year; foreigners were heavy sellers. A decline, followed by a recovery, with most of the gain wiped out in the late dealings, characterized Thursday's trading; the grain and cotton markets were firmer. Friday the market was less active, but prices rallied and closed at a gain of 1 to 3 per cent; foreigners were buyers. Saturday the market was dull but steady, and prices averaged slightly higher.

Money on call continued to range between 2½ and 2 per cent. The demand for time money was light. The statement of the actual condition of clearing house institutions showed loans decreased $23,621,000; net deposits decreased $8,150,000; total reserve, $445,505,000; excess of reserve, $35,432,350, an increase of $8,579,400; and the percentage of reserve, 27.1, compared with 26.6 the previous week. Non-member banks and trust companies showed loans increased $154,400; net deposits decreased $1,743,300; reserve decreased $526,700, and the percentage of reserve 19.4 against 19.23 the week previous. Commercial failures for the week were 232, compared with 228 the preceding week, and 215 the corresponding week last year. Bank clearings for the week showed a smaller total than a week ago, but a gain of 12 per cent over last year. Shares were sold to the number of 3,656,600, compared with 4,228,600 the preceding week, and 2,628,600 the corresponding week last year. Bonds, exclusive of government bonds, were sold to the amount of $9,488,000, compared with $12,023,000 the preceding week, and $7,651,000 the corresponding week last year.

	Closing Quo. Aug. 19	Changes in week	Annual Meeting date 1911	Stock Outstanding	Basis	Dividend Last Dividend	Dividend Date Last Pay
Allis-Chalmers	6⅜	— ⅜		$19,820,000			
Allis-Chalmers, pr	20	—1	Nov. 2	16,150,000	7 cum.	1¾ Q.	Feb., 1904
American Can	10¼	+1⅛	Feb. 1	41,233,300		1¾ Q.	
American Can, pr	85	+3		41,233,300	7 cum.	1¾ Q.	July, 1911
Am. Car & Fdy	51	+ ⅜	June 29	30,000,000		½ Q.	July, 1911
Am. Car & Fdy, pr	116½	+ ⅝		30,000,000	n. c.	1¾ Q.	July, 1911
American Loc	38	+2	Oct. 17	25,000,000	5	1¼ Q.	Aug., 1908
American Loc, pr	104¾	.....		25,000,000	7 cum.	1¾ Q.	July, 1911
American Ship	54⅜	—10⅜	Oct. 11	7,600,000	4	2 Q.**	June, 1911
American Ship, pr	111	.....		7,900,000	7 cum.	1¾ Q.	Oct., 1911
Am. Steel Foundries	36	.....	Dec. 7	17,184,000		1 Q.	May, 1911
Barney & Smith	20	.....	June 6	2,000,000	4	1 Q.	Dec., 1907
Barney & Smith, pr	87	.....		2,500,000	8 cum.	2 Q.	Sept., 1911
Bethlehem Steel	30¼	—1⅛	April 4	14,862,000		.....	.....
Bethlehem Steel, pr	60⅛	—1¼		14,908,000	7 n. c.	¾ Q.	Feb., 1907
Cambria Steel	44⅞	+ ⅜	Mar. 21	45,000,000	5	1¼ Q.	Aug., 1911
Cambria Iron	44	+ ½		8,468,000*	4	2 S. A.	Apr., 1911
Chicago Pneumatic Tool	48	+1	Feb. 20	6,485,800	4	1 Q.	July, 1911
Colorado Fuel	30	+1	Oct. 16	34,235,500		1¾ Q.	Apr., 1902
Crucible Steel	12¼	+ ¼	Oct. 18	24,578,400		3½.	.....
Crucible Steel, pr	81½	+1¼		24,463,500	7 cum.	1¾ Q.	June, 1911
Empire Steel	5	.....	Feb. 22	1,254,770		.....	.....
Empire Steel, pr	50	.....		2,500,000	6 cum.	1 S. A.	July, 1911
Fay & Egan	70	.....	Feb. 21	1,000,000	6 cum.	3 S. A.	Feb., 1911
Fay & Egan, pr	110	.....		1,000,000	7 cum.	1¾ Q.	Aug., 1911
General Electric	154¾	+2¾	May 9	65,179,600	8	2 Q.	Oct., 1911
Harbison-Walker	48	—6½	Jan. 16	18,000,000		½ Q.	Sept., 1911
Harbison-Walker, pr	99	.....		9,600,000	6 cum.	1½ Q.	July, 1911
International Pump	36	+3¼	Dec. 12	17,762,500		1 O.	Nov., 1910
International Pump, pr	87	.....		11.350,000	6 cum.	1½ Q.	Aug., 1911
Lackawanna Steel	37½	.....	Mar. 4	34,978,000		.....	.....
Lake Sup. Corp	25	+1½	Oct. 4	40,000,000		.....	.....
New York Air Brake	66	+1	Mar. 8	10,000,000	6	1½ Q.	July, 1911
Niles-Bement-Pond	94	.....	Feb. 8	8,500,000	6	1½ Q.	Sept., 1911
Niles-Bement-Pond, pr	104	.....		2,000,000	6 cum.	1½ Q.	Aug., 1911
Otis Elevator Co	69	—3	Mar. 20	6,375,000	1	1 Q.	July, 1911
Otis Elevator Co., pr	100	— ½		6,310,000	6 n. c.	1½ Q.	July, 1911
Pa. Steel	60	.....	May 8	10,750,000		.....	.....
Pa. Steel, pr	106½	+ ½		16,500,000	7 n. c.	3½ S. A.	May, 1911
Pittsburg Coal Co	18¾	+ ¼	Feb. 10	28,104,600		.....	.....
Pittsburg Coal Co., pr	86⅛	+1⅞		27,071,800	7 cum.	1¾ Q.	July, 1911
Pressed Steel Car	31½	—1	Feb. 15	12,500,000		1 Q.	Aug., 1911
Pressed Steel Car, pr	99¾	.....		12,500,000	7 n. c.	1¾ Q.	Aug., 1904
Pullman	158¾	— ¼	Nov. 8	120,000,000	8	2 Q.	Aug., 1911
Railway Stl. Spring	32½	+2	Mar. 2	13,500,000	2	1 S. A.	Oct., 1908
Railway Stl. Spring, pr	101½	— ⅜		13,500,000	7 cum.	1¾ Q.	June, 1911
Rep. Iron & Steel	26⅜	+1⅜	Oct. 18	27,191,000		.....	.....
Rep. Iron & Steel, pr	91	.....		25,000,000	7 cum.	1¾ Q.	July, 1911
Sloss-Sheffield	45	—1¼	Mar. 15	10,000,000	5	1¼ Q.	Sept., 1910
Sloss-Sheffield, pr	112	.....		6,700,000	7 n. c.	1¾ Q.	July, 1911
U. S. Pipe & Fdy. Co	13⅛	—1⅜	June 28	12,106,300		1 Q.	Dec., 1910
U. S. Pipe & Fdy. Co., pr	47½	—5½		12,106,300	2	1¼ Q.	June, 1911
U. S. Steel	73⅜	+ ⅞	April 17	508,302,500	5	1¼ Q.	Sept., 1911
U. S. Steel, pr	116¼	+ ⅝		360,281,100	7 cum.	1¾ Q.	Aug., 1911
U. S. Steel 5s	104⅛	— ¼		463,798,000	5	.....	.....
Va. Iron, Coal & Coke	88¾	.....	Sept. 19	9,073,680		5. †	Oct., 1907
Westinghouse Electric	66¾	+1⅜	July 26	3,998,700*		1¾ Q.	July, 1911
Westinghouse Air Brake	150	.....	Oct. 3	13,750,000*		5 Q. ‡	July, 1911

Par value of shares, $100, except those starred (*), $50.
**Includes last 1 per cent payment of 4 per cent extra.
†Stock.
‡Includes 2½ regular, 1½ extra and 1 special.

Copper Stocks.

New York.—Amalgamated Copper closed 62⅛, a net gain of ⅝.

Boston.—Butte Coalition closed 16, a net loss of 1¼; Calumet & Arizona closed 49, a net loss of 2½; Calumet & Hecla closed 410, a net gain of 7; North Butte Mining closed 25½, a net loss of 3; Quincy Mining closed 66, a net loss of 7.

Financial Notes.

The General Electric Co. has declared the regular quarterly dividend of 2 per cent, payable Oct. 14.

Quincy Mining Co. has declared the regular quarterly dividend of $1 a share, payable Sept. 25.

The Harbison-Walker Refractories Co. has declared a quarterly dividend of one-half of 1 per cent on its common stock, payable Sept. 1, this rate being the same as has been in force all year.

The Joliet Rolling Mill Co., Joliet, Ill., has increased its capital stock from $150,000 to $250,000, and the number of its directors from three to five.

THE IRON TRADE REVIEW

Devoted to Iron and Steel Manufacture and to the Machinery, Metal-Working and Foundry Trades.

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THE AVERAGE PAID CIRCULATION OF THE IRON TRADE REVIEW FOR THE ISSUES OF THE FOLLOWING MONTHS WAS:

January, 1911	6,058
February	6,072
March	6,091
April	6,108
May	6,112
June	6,124
July	6,138

August 24, 1911

The Latest Production Statistics

Early in the year, the American Iron and Steel Association presented complete production statistics for the calendar year 1910 in pig iron, steel ingots and rails. All other production statistics are given for the first time in the annual statistical report, which has just appeared and which closes the statistical work for the year. To cover the statistics for 1909 the association issued two reports, the principal report, dated July 25, and a supplementary one dated Dec. 26, containing a number of items which had not been reported upon when the principal report was issued. This year the work is concluded in one volume, which has been given to the public within the past 10 days, under date of July 25.

The pig iron production of 27,303,567 tons (slightly revised from the original figure given out in January) shows a gain of 5.8 per cent over the preceding year, which had held the record by a small margin over 1906 and 1907. It will be recalled that 1908 was a decidedly "off" year, with production of less than 16,000,000 tons. Thus it appears that the production in the five years 1906-10, inclusive, showed very little progressive increase, four of the years averaging 26,000,000 tons, while counting the "off" year 1908, the average of the five years was 24,000,000 tons. The iron trade had evidently drifted into a period of relatively slow growth in tonnage, after a very rapid expansion. Surveying the period from 1890 to 1910, inclusive, it may be remarked that 1890 passed all previous records by a large margin, with a production of 9,202,703 tons. Until 1898, eight years later, there was no year which produced as much as 10,000,000 tons, while the average of the eight years starting with 1890 was less than 9,000,000 tons. Then began a tremendous increase, for while 1897 broke previous records, its output was only 9,652,680 tons. The next nine years set such a pace, however, that the 1906 production was 25,307,191 tons, an increase of 161 per cent, the production being multiplied by more than two and a half in nine years. Since 1906, as just observed, we have had a slow increase. From 1890 to 1910, 20 years, production increased 196 per cent, practically being multiplied by three in 20 years, but in a period of nine years in the 20, from 1897 to 1906, the production was multiplied by more than two and a half. Without the actual tonnage statistics for reference, it would be impossible to realize that production increases so irregularly, when it is well known, and substantiated by the production statistics of half a century, that the average rate of increase is a doubling every 10 years, and the proportionate increase has been as great in recent times as in early times, if only one does not take too short a period of years in making the comparison.

The growth of the steel industry proper has naturally been more rapid than the growth of the blast furnace industry, for in the early part of the 20-year period there was rapid supplanting of wrought iron by steel. Even taking rolled steel and rolled iron together the growth has been more rapid than that of pig iron, because the use of iron castings has grown less rapidly than the use of rolled material.

The production of all rolled iron and steel in 1890 was 6,022,875 gross tons, and in 1910, 21,621,279 tons, an increase of 258 per cent, against 161 per cent for pig iron. Unfortunately the 1890 statistics did not separate rolled steel from rolled iron, but it may be estimated that one-third the total was rolled iron. In 1910 only 8.5 per cent of the total was rolled iron.

Thus, while from 1890 to 1910 pig iron production was multiplied by three, rolled iron and steel was multiplied by three and one-half and rolled steel alone was multiplied by five.

So much for the general trend of the industry over a couple of decades. The immediate trend as to total production is matter for debate and cannot be indicated by recent statistics. The trends in individual lines are of distinct interest, and can readily be studied. It chances that production of all rolled iron and steel in 1899 was just a trifle less than one-half the production in 1910, so that comparisons can easily be made of the respective growths in 11 years. While the total did a trifle better than double, production of plates and sheets (including black plates for tinning) was multiplied by more than two and a half, while the same occurred with structural shapes. The production of rods, and of merchant mill products, skelp, etc., did little better than double. Rails increased by only 60 per cent.

Thus we have it that rods and merchant mill products, skelp, etc., kept up with the procession, plates and sheets and structural shapes ran far ahead, and rails ran far behind.

From 1909 to 1910 the progress was not the same as in the 11-year period.

Rod production actually decreased 4 per cent, but too much notice should not be taken of that when the 1909 production had shown such a great gain over previous years. However, be it remembered, that in the early days rods had a very rapid growth because wire nails were supplanting cut nails. That movement was practically completed 15 years ago, and since then the increase in rod production has been relatively moderate.

The statistics show a slight decrease in structural shapes from 1909 to 1910, but this is due to the segregation for the latter year of steel ties and sheet piling, items which in 1909 were included with structural shapes. Had they been included in the 1910 structural total, a slight but quite negligible gain would have been shown. The new statistics are of interest. The material was all made of steel, and is reported as follows in gross tons:

Sheet piling	26,598
Railroad ties	49,048

It has required considerable emphasis lately to disabuse the public mind of the idea that rails are a commodity the production of which rapidly increases. Such is not the case. There was heavy demand in the eighties, when a large part of the existing mileage was being built. In 1887 more than half as large a rail tonnage was produced as in any year since, and it was not until 1899, 12 years later, that the 1887 rail record was broken. In the first half dozen years of the present century, there was a fresh burst in demand, due not so much to the building of new road as to the laying of subsidiary track and the replacement of old and light rails with the modern heavy sections. This work culminated in 1906, when there was a rail output which has not since been duplicated, whereas no other important product has failed to break its 1906 record by a large margin. If one exclude the tonnage of rails which has been pounded out of service by having heavy, high-speed trains run over them and which had to be replaced very quickly by modern heavy sections, only a very small portion of the 60,000,000 tons of steel rails which have been laid in the United States has thus far been worn out. The requirements to replace worn out rails are just beginning to become heavy, with the steady growth in railroad traffic. The freight ton-mileage of the country has been doubling every 12 years, and this is beginning to wear out rails, irrespective of how many miles of railroad this business is conducted upon.

Aiming at the Root

Happiness and contentment are, after all, largely matters of environment into which has entered in an indeterminable ratio the quality of individual disposition. In the estimation of many, disposition is synonymous with self-control, born of training and experience, or a form of moral courage. Why two workmen, equally qualified, go about their daily tasks in diametrically opposite ways, finds its explanation largely on the ground of difference in thoughts, in ambitions and in those mental impulses that tend to make the aspect of life more cheerful and sustaining. Health and home life have much in common in affecting this point of view.

Such psychological phenomena have been recognized in the welfare work among the employes which is assuming more and more importance in the iron and steel industry of this country. In working out the fundamentals for the effective execution of these plans, those in charge of the work have started upon the assumption that before all things else, comes health. They are now inaugurating a campaign for carrying the precepts of protection against diseases not only to the mills, but, what is more important, beyond them to the homes of the workmen. Some of these measures have been reduced to a very homely form. There is now being circulated among the mill employes of different plants in the country by the American Iron and Steel Institute, pamphlets treating of one prevalent cause of disease, the common house fly. In this treatise, facts and figures are given to prove the deadly menace of the house fly as a disease carrier and an effort is made to impress the importance of these statements upon the workman and his family, not only in their home life, but wherever there is occasion to encounter this common pest. Protective and preventative measures are outlined and simple rules given, which, if followed, would greatly reduce the danger from this source. The cultivation of an appreciation of the danger of the house fly is but one of the methods which the special authorities handling this work are employing to surround the health of the workman and his family with better hygienic protection.

It is hoped that the manufacturers generally will assist in the distribution of this circular to their employes and it is expected that before long a very large number will be in the hands of the men. Another matter which is receiving attention of the committee is an investigation of the drinking water supply at manufacturing plants in the iron and steel industry. A circular is being sent out asking questions of different companies as to whether they own their own water supply or use a municipal supply; as to the source of the drinking water supply, and as to bacteriological and chemical analyses. Upon replies to these questions will be based further activity toward improving conditions. Thomas Darlington, M. D., is secretary of the welfare committee.

To any one who has even casually observed the typical steel mill town, with its mixed population and manners of life, it needs not to be said that here lies a broad field for such educational work. To really help the workman and to improve his conditions after all, is to teach him to help himself. Such a campaign of education, accordingly, is well directed and should bear its measure of good results.

There is an economic side to the whole question. If the workman has only his labor or his skill with which to exchange for the necessities of life, the protection of his health is the most essential thing to his own good. With such a factor properly taken care of, the net result is higher effi-

ciency of labor for the workman, greater value of service for the employer and a larger measure of return for both. Certainly no more effective field for results could be selected than in the establishment in the workman's home of the simple and prudent rules of hygiene and sanitation which are so often lightly regarded.

Adding to Drop Forging Equipment

The Park Drop Forge Co., Cleveland, which recently increased its capital stock from $150,000 to $240,000, advises that for the past six months it has been preparing its equipment to the end that a larger future business can be cared for and at the same time more exacting work done. Its aim is to manufacture the highest grade drop forgings of the heavier class such as multiple throw crank shafts, truck axles and alloy steel gear blanks. It has therefore installed a double equipment of hydraulic presses, heavy power forging machines and steam drop hammers. The equipment for heat treating forgings has been improved and increased, all combining to make the Park works one of the best equipped for this class of work in the country. The capital increase has been designed to cover the expenditures, to enable further equipment increase and add more working capital. George C. Gordon, until recently with the Wyman & Gordon Co., has become a stockholder and manager of the company.

Welsh Tin Plate Trade

Swansea harbor trust returns for the week ending Aug. 5, with comparisons, follow:

	Week of Aug. 4. Boxes.	Previous week. Boxes.	Corresponding week last year. Boxes.
Received	104,523	97,032	64,894
Shipped	164,426	70,753	120,323
Stocks	195,852	255,755	111,105

New York Copper Exports

Copper exports for the week ending Aug. 17 were 7,372 tons, an increase of 1,512 tons; Aug. 1 to Aug. 17, 15,908 tons, a decrease of 1,840 tons; Jan. 1 to Aug. 17, 210,641 tons, an increase of 40,651 tons.

The Federal Smelting & Refining Co. has declared the regular quarterly dividend of 1¾ per cent on its preferred stock, payable Sept. 15.

DISTRIBUTE COPIES

Of Biographical Directory of American Institute.

Copies of the biographical directory of the American Iron and Steel Institute are now being distributed among the members of that organization. This work, which has been prepared under the direction of Secretary Jas. T. McCleary, and with the co-operation of Assistant Secretary Howard H. Cooke, of the Institute, contains sketches of the lives of a majority of the members of the organization, each of which occupies a single page. An individual half tone engraving accompanies most of the biographies. The book is handsomely bound in leather, is printed in large, clear type, is well arranged and withal is a very prepossessing handbook on the individual side of the iron and steel business of the country, for a great majority of the most prominent manufacturers of this class in the country are affiliated with the institute. The front piece is a very artistic halftone engraving of Elbert H. Gary, president of the institute. In the foreword, Secretary McCleary states that inasmuch as one of the objects of the institute is the promotion of acquaintanceship and friendship, the book of biographies has been prepared as one means to this end. The volume is intended for circulation in this country among the members of the institute exclusively, but copies are being sent to a number of the leading iron and steel manufacturers of Europe. There are some omissions among the membership in this first edition of the directory arising principally from the fact that some members were abroad during the time of the preparation. Later editions of the work may be published from time to time.

Use of Molybdenum.—A number of tests have been carried out lately with a metal possessing qualities of great resistance against the penetration of super-caliber projectiles, says our Birmingham, Eng., staff correspondent. The first offer has been made to the British admiralty, which regards the metal somewhat favorably from the point of view that if successful it would enable the thickness of the armor to be reduced, involving a lessened displacement in the vessels. The metal is molybdenum and it is used as an alloy with nickel in steel. Official experiments by the government show a superiority of 15 to 20 per cent over the recognized armor-plate standard. It is said that the metal is found in small quantities in America, Canada, South Africa, Norway and Sweden and the pure specimens are worth about 7s per pound. It has peculiar hardening qualities when used in combination with nickel.

Coal and Coke Shipments

The statement of coal and coke shipments originating along the lines of the Pennsylvania Railroad Co. east of Pittsburgh and Erie for the month of July, and for the period from Jan. 1 to July 31, shows:

For the month of July: Anthracite coal, 781,854 tons, an increase of 158,604 tons; bituminous coal, 3,414,146 tons, an increase of 273,729 tons; coke, 815,599 tons, a decrease of 192,671 tons; total, 5,011,599 tons, an increase of 239,662 tons.

For the period from Jan. 1 to July 31: Anthracite coal, 6,817,754 tons, an increase of 426,743 tons; bituminous coal, 23,162,859 tons, a decrease of 195,653 tons; coke, 6,064,145 tons, a decrease of 2,214,805 tons; total, 36,044,761 tons, a decrease of 1,983,715 tons.

Plant Remodeled

The Southern Car Co., High Point, N. C., advises that its plant has been entirely remodeled at a cost of about $20,000 and approximately $20,000 worth of machinery has been installed. The company is also spending $15,000 on other improvements such as fire protection, sewerage, lighting of its plant and a transfer table.

St. Louis Shipments

Receipts and shipments of pig lead and spelter at St. Louis for the last two weeks were as follows:

	Zinc and Spelter.	Pigs of lead.
Receipts:		
For week ending Aug. 12.....	100,500	63,170
For week ending Aug. 19.....	99,380	40,110
Shipments:		
For week ending Aug. 12.....	84,520	33,290
For week ending Aug. 19.....	134,040	33,850

Funeral Services.—Funeral services over the body of John W. Gates will be conducted at the Plaza hotel, New York City, Wednesday morning, Aug. 23, at 10 o'clock. They will be conducted by the Rev. Wallace McMillen. The body will then be temporarily placed at Woodlawn cemetery, Brooklyn.

At the annual meeting of the Calumet & Hecla Mining Co., which was held in Boston, Aug. 15, all of the retiring directors were re-elected.

British Iron Markets

Dullness Prevails, But Hope is Entertained—Labor Troubles.

Office of THE IRON TRADE REVIEW, Prince's Chambers, Corporation St., Birmingham, Eng., Aug. 12.

Dullness combined with increasing hopefulness has characterized the British iron market during the past week. The quietude is chiefly attributable to holiday. The bank holiday usually means for a number of works stoppage for the week, while the return of the heat wave has further tended to a lessening of production. Another very important factor has been the serious epidemic of labor troubles in London and other parts of the country. The general strike among the transport men, affecting as it did some 70,000 workers in London alone, could not be without its effect on trade. As a matter of fact, inland agents were notified during the week that consignments for the ports could not be accepted. The iron and steel trades have suffered somewhat both directly and indirectly. Apart from these temporary, and it is to be hoped rapidly passing, drawbacks, the outlook is much more encouraging than it was a few weeks ago. As far as pig iron is concerned the most notable improvement is in the northern markets. In Cleveland, sellers' prices are slowly but steadily advancing and consumers are more disposed to cover their forward requirements. During the week, the demand for Cleveland warrants has shown increased activity and a rise of three halfpence per ton on Wednesday has been followed by one of twopence at the end of the week, making 47s ($11.52) per ton cash buyers the highest figure reported for three weeks. There is every reason to believe that the upward movement, which in normal times is always observable in August, will continue, especially in view of the more favorable news from the United States, as well as the improvement in local conditions and the brisker shipping trade. While the ruling price for No. 3 Cleveland G. M. B. pig iron is now 47s 3d ($11.58) there has been a little selling from second hands at somewhat lower prices. For September deliveries, 47s 6d ($11.64) and for later deliveries 47s 9d ($11.70) are being demanded. For mixed numbers east coast hematite pig iron the market has considerably strengthened, owing to the advance in price of west coast hematite iron, and the price now demanded is 62s ($15.18), cash sellers. Though a few odd lots have been disposed of at 61s ($14.94), the latter consideration is not likely to affect the market seriously, as the lower price is one at which it does not pay to produce. For forward bookings the market is increasingly firm. Rubio ore delivered at Middlesburgh is still quoted at 19s 6d per ton, but there are practically no sales.

Finished Materials.—Increased activity is observable in most descriptions of finished iron and steel. Manufacturers are subject to much pressure for delivery, especially for bars, strip and sheets. The improved reports of nearly all the railway companies may be regarded as foreshadowing greater enterprise in extensions and in replenishing and improving rolling stock. In some of the steelworks, there are sufficient orders to afford occupation for the remainder of the year. There is a steady call for best bar iron from the rolling stock makers and heavy iron founders and the common bar trade shows signs of improvement. Belgian competition has ceased for the present to be a factor and prices generally are stronger. The galvanized sheet trade has been somewhat hampered by the transport workers' strike, which has prevented the delivery of spelter. There has lately been an advance in corrugated sheets of about 15s for best qualities, one of the reasons for this being the advance of about £2 on the price of spelter.

Makers of tin plates, owing to the reduction of their makes due to the heat and the holidays, are holding out for increased prices for plates for forward delivery, while plates for prompt delivery are scarce. Tin plate bars are from £4 15s to £5. The prices for tin plates at the end of the week are I. C. 20 by 14, 13s 10½d to 14s; oil sizes, 18¾ by 14 by 124 sheets and 19¼ by 14 by 120 sheets are quiet at 14s 3d, while 20 by 10 by 225 sheets are steady at 20s.

Foreign Rail Trade

Matters in the steel rail trade are in a condition of suspended animation, although a few tidy lines have to be decided—notably 20,000 tons for Siam, 31,000 tons for West Australia, 6,500 tons for New South Wales, and 21,000 tons for Victoria. The order for 6,000 to 7,000 tons for 50's and 80's for South Australia has gone to the Barrow Hematite Co.—*The Ironmonger*, London.

The Fitzsimmons Steel & Iron Co., Chicago, has increased its capital stock from $20,000 to $50,000.

SCHOOL BUILDING

And Other Structures Being Erected by Steel Company.

The Commonwealth Steel Co. has broken ground at its plant in Granite City, Ill., for the erection of five new structures, including a school building for the education of the children of employes.

The improvements will cost about $100,000. The buildings, except the school, will take the place of old ones. There will be a machine shop, electrical department and chemical laboratory, all of which will cost about $31,000, and brick and steel storeroom, to cost about $20,000. The engine roundhouse and blacksmith shop will be of brick and steel, and will cost about $15,000. A building for timekeepers and checkers will cost $15,000.

Next month the company will start the erection of a pattern shop, 100 x 200 feet. All of the buildings will be supplied with modern machinery and equipment.

The school building will be two stories, with an auditorium, stage, kitchen and dining room.

Allouez Bay Dock is Completed

The contractors have turned over to the Great Northern Railroad Co. the new concrete and steel ore dock, No. 4, which has been in course of construction at Allouez Bay for more than a year. The Great Northern will use No. 4 exclusively for handling Steel Corporation ore from the Minnesota ranges. The dock is 1,800 feet long and has 150 ore pockets on each side, with a total storage capacity of 106,000 tons. Six of the largest vessels on the lakes may be loaded at one time. Electrical machinery is employed wherever possible. It is expected that the dock will handle 5,000,000 tons of ore annually.

The Dimmick Pipe Co., Birmingham, Ala., has ratified the sale of its plant at East Birmingham, Ala., to the United States Cast Iron Pipe & Foundry Co., at a cost of $293,000 and a bonded indebtedness of $179,000. The plant will be improved and operated by the United States company.

The General Motors Co. has decided to change the date of its fiscal year from Sept. 30 to July 31, hence the next statement will be for 10 months instead of a full year.

ORE MOVEMENT

To Eastern Furnaces Only Moderate —Foreign Movement Less.

A number of small iron ore operations in northern New Jersey and southern New York continue to ship to eastern blast furnaces practically their full output. This movement, however, is not large, running at about 40,000 to 50,000 tons monthly. A number of eastern furnaces are using these ores in their mixtures because of their low cost, which is represented by about 7½ to 7¾ cents per unit of iron delivered. In the Adirondack mining regions, operations are not as active as they have been for the reason that requisitions from eastern furnaces are less liberal. The foreign ore movement in August is falling considerably short of July, when the incoming vessels were considerably bunched. In July, the port of Philadelphia received 21 cargoes, including two of manganese ore from India and Brazil. Of these five were from Cuba, nine from Spain, three from Sweden, one from Newfoundland and one from Africa. In August, to date, the arrivals have been but nine cargoes, including five from Cuba, two from Newfoundland, one from Sweden and one from New Brunswick.

Some Contracts for Midland Plant.

The Pittsburgh Crucible Steel Co., a subsidiary of the Crucible Steel Co. of America, has awarded some contracts in connection with the building of the proposed new open-hearth steel plant at Midland, Pa., on property purchased early this year from the Midland Steel Co. Bids have been received for the open-hearth furnaces, blooming mill, engine, cranes, etc., but so far only a few contracts have been let. It is expected that the greater portion of the awards will be announced next week.

For Concentrating Works

The formal transfer of a large piece of land at Port Bolivar, Tex., from Col. L. P. Featherstone to Wesley Merritt, of Chicago, a few days ago, is said to be a step toward the location of works at Port Bolivar for concentrating iron ore from the eastern Texas fields before shipment to Atlantic coast ports. A railroad from the ore deposits in Marion, Cass and Upshur counties, now in course of construction, to Port Bolivar, will be ready to operate this fall. The Santa Fe railroad is starting upon the construction at the latter port of temporary ore docks upon which it is said will be expended $50,000.

Name Changed and Plant Enlarged

The firm name of Bowes, Jamieson & Co., Hamilton, Ont., Can., manufacturers of stoves and ranges, has been changed to Bowes-Jamieson, Ltd. J. R. and J. W. Jamieson, sons of the former proprietor, will have charge of the active management of the business. The company is capitalized at $100,000. Shortly after the first of the year the company will enlarge its plant, the general arrangement of the foundry will be changed and the tonnage will be increased from 7 to 10 tons per day. Molding machines will be installed and some work will be mounted on match-plates. The company is in the market for a set of patterns of a medium-priced line of warm air furnaces.

Dividend Passed

Directors of the United States Cast Iron Pipe & Foundry Co. have voted to pass the quarterly dividend of 1¼ per cent on preferred stock, for the reason that while earnings have been sufficient to allow for this dividend payment yet it is believed more advisable to expend the money in additional improvements and acquiring additional property.

First Sheet Rolled.—The first sheet of ingot iron was put through the rolls of the new sheet mills of the American Rolling Mill Co., at Middletown, O., on Aug. 7, amid the blowing of whistles and applause of many onlookers. Just 10 years ago the first sheets were rolled at this plant. Four out of eight of the new mills have just been started and two more have since been placed in operation. The addition brings the total of hot mills operated by the company at Middletown and Zanesville, O., up to 18.

The Mumford Molding Machine Co. has opened an office at 75 High street, Boston, where T. J. Mumford, 2nd, will represent them.

The Pittsburgh Steel Mfg. Co. has moved its offices from the Jenkins Arcade building to the Farmers' bank building, Pittsburgh.

The Pittsburgh Bridge & Iron Works, Pittsburgh, has increased its capital from $100,000 to $200,000.

Capital Increase to Carry Out New Plans

At a meeting of the stockholders of the Perfection Spring Co., Cleveland, which was held July 31, it was voted to increase the capital stock of that company from $200,000 to $500,000, the increase to be issued in the form of common stock. The reason for this action was two-fold. In the first place additional stock is needed to carry out the company's plans of entirely remodeling its present plant, thus making it a modern establishment in all departments, and also that it might consummate the purchase of the Standard Brass Co., also of Cleveland, the negotiations of this latter deal having been but recently closed. The remodeling of the present plant is made necessary from the fact that the firm will shortly commence the manufacturing of a new motor for motor cars, and for this purpose new machinery will be installed, but at present no new buildings will be erected. The Perfection company will in the future operate both plants, and the work of remodeling and reorganization will be begun immediately.

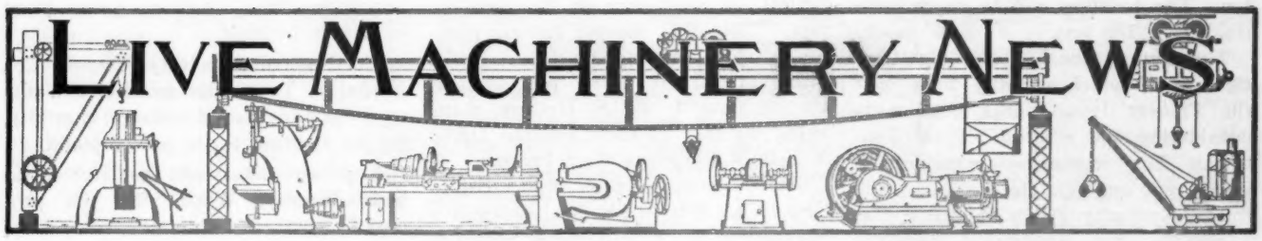
Will Investigate Short Lines

Arrangements by the Interstate Commerce Commission are being formulated for the investigation of the rates, division of rates, and allowances made to iron and steel industries which own and operate short lines of railroad in connection with their own plants.

It having been suspected that overgenerous allowances, in the nature of rebates, have been made to iron and steel companies as a concession for the use of their private tracks, in official classification territory, and particularly that portion lying east of Cleveland and Cincinnati, in Ohio, the commission recently issued an order directing that an investigation proceed, and it is under this order that the present arrangements are progressing.

A Pennsylvania charter has been issued to the Carbon Steel Co., of Pittsburgh, with capital stock of $5,000, the incorporators being Boyd P. Ewing, Wilkinsburg, Pa.; Fred C. Strobert and C. Alvin Jones, both of Pittsburgh.

The Warwick Iron & Steel Co., Pottstown, Pa., has purchased 22 acres of land near Lebanon, Pa. This site was acquired for a new plant.



In New York, business in machinery continues fair and numerous small lot orders have been booked by dealers the past week. The automobile makers at present are the most active buyers in that market. No further action has been taken by the railroads in regard to lists which have been out for some time. In Pittsburgh, a number of contracts have been awarded by the Pittsburgh Crucible Steel Co. for equipment for its proposed open-hearth plant at Midland, Pa., and it is expected that other awards will be made shortly. There is a good demand for electrical machinery and the Westinghouse companies report a large volume of business on the books. In Cleveland, bids are in on the machinery for the proposed new technical high school and it is expected that action will be taken shortly by the board of education. In Chicago, business in small lots continues at a somewhat better rate. The Chicago & Northwestern railroad has supplemented its recently submitted list of machine tools with additional specifications.

Foundries

The stove works of W. J. Copp, Son & Co., Fort William, Ont., is being taken over by F. W. King, London, Ont., and others. The plant will be enalrged and overhauled.

Bowes-Jamieson, Ltd., Hamilton, Ont., formerly Bowes, Jamieson & Co., will enlarge its plant after the first of the year, and the capacity of the foundry will be increased from 7 to 10 tons per day. Molding machines will be installed along with other equipment.

The Grafton Foundry Co., Grafton, Wis., whose plant was recently damaged by fire, advises that it will rebuild at once. The new structure will be of steel and cement, 72 x 120 feet. It will need tumbling barrels, grinders, blowers and all kinds of foundry tools and equipment.

The Aluminum Foundry Co., Sebring, O., recently incorporated by Frederick Bauch, Alliance, O., with a capital of $20,000, is about to build a foundry at Sebring. Aluminum castings will be made exclusively. The foundry will be 50 x 100 feet and will be in operation about September.

The Hillen Mfg. Co., Louisville, Ky., is being organized by George F. Hillen, formerly superintendent of the brass department of the Standard Sanitary Mfg. Co. A building has been secured at 308 East Green street, that city, and is being equipped for manufacturing plumbers' supplies and general brass work.

Water Works

Santa Monica, Cal., will install a salt water fire system and will soon be in the market for pipe, hydrants, motors and pumps.

At Challis, Id., and Hermiston, Ore., bond issues have been authorized to provide for the construction of new water systems.

At Spokane, Wash., the city engineer has been instructed to prepare plans for an immediate extension of the city's water system.

The city of Fallon, Nev., has just disposed of its recently authorized bond issue to provide for the construction of a new water system.

The city of Erie, Pa., has employed engineers to report and prepare preliminary plans and estimates for extensive improvements to the water system of the city.

The city councils of Mansfield and North Bend, Ore., are considering the construction of a water system that will serve both towns. Several engineers have been asked to submit plans.

Harlan, Ky., is considering the construction of a water system to cost $50,000. The commercial club of that city is promoting the organization of a stock company for the purpose of erecting the plant.

The commercial club at Santaquin, Utah, is urging the construction of an entirely new water system for the town and Sanitary Inspector C. F. Emery, of the state board of health, Salt Lake City, has just completed an investigation of the proposition.

Director Joseph G. Armstrong, of the department of public works, Pittsburgh, will receive bids until Aug. 29 for the following equipment for the municipal pumping stations: Furnishing and laying a 30-inch riser main at the Mission street pumping station; coal and ash handling apparatus for the Aspinwall pumping station; steam turbine driven centrifugal pump, with a capacity of 100,000,000 gallons daily, with appurtenances for the Ross pumping station; inspection and testing of material and workmanship in the construction of pumping engines for the Aspinwall station. Blueprints and specifications can be had at the office of Director Armstrong, Oliver building, Pittsburgh.

New Works

T. J. Finucane, Youngstown, O., will erect a building, 75 x 100 feet, to be used as a boiler factory.

The Louisville Railway Co., Louisville, is considering the erection of a plant to manufacture and repair street cars.

The Burke Electric Co., Erie, Pa., which recently completed an extension to its plant, 75 x 400 feet, has completed plans for another extension.

The Harris Typewriter Co. has leased the plant of the M. D. Wells Co., Fond du Lac, Wis., and will immediately purchase the necessary equipment.

The Brillion Iron Works, Brillion, Wis., has completed plans for extensive improvements and enlargements. A reinforced concrete shop addition will be erected.

The Triumph Bedspring Co. is purchasing equipment for the new plant to be erected at New Castle, Pa. C. E. Glasser is president of the company, which was organized recently.

The Kissel Motor Car Co., Hartford, Wis., has awarded contracts for the construction of a new shop building, 107 x 200 feet, three stories. Plans for the equipment have not yet been completed.

The Park Electric Co., Toronto, recently organized, has purchased for $30,000 a four-story building at Adelaide and Jarvis streets. It will be refitted for manufacturing electric automobiles.

The Cary Mfg. Co., 19 Roosevelt street, New York, has let the contract for a new factory building which will be erected on Jay street, Brook-

lyn. The building will be seven stories, 100 x 176 feet.

The International Hoist Co., Antigo, Wis., which recently took over the Pioneer Iron Works, Antigo, is considering the erection of an addition. The company manufactures hoists, gas engines, etc.

The Kentucky Public Elevator Co., Louisville, has announced that its plant will be considerably enlarged in the immediate future, and that improvements involving an expenditure of $100,000 will be made.

The McKinley Traction Cultivator Co. has leased a two-story brick building on the Iron Mountain railroad, Second and St. George streets, St. Louis, and will begin the manufacture of motor plows in a short time.

The Lakeside Forge Co., Erie, Pa., advises that it has taken over the plant of the Lakeside Forge & Wrench Co., that city, and will continue the business on a larger scale. Several drop hammers will be added to the equipment.

The Berlin Machine Works, Beloit, Wis., has purchased 11 acres in Portland, Ore., where it is proposed to establish a large branch similar to the Canadian branch at Hamilton, Ont. It has not yet been decided when work will begin.

The Crescent Pump Works, Flatiron building, Fort Worth, Tex., which will be incorporated shortly with $25,000 capital, is taking bids on machinery and equipment for manufacturing pumps for water works, etc. W. T. Pittman is interested.

The Otto Automobile Sales Co., Philadelphia, is contemplating a removal of its plant. Negotiations are now under way with financiers of Mount Holly, N. J., with the purpose of interesting new capital to the extent of $100,000 to further the enterprise.

A factory building has been secured by the Nashville Adding Machine Co. at Nashville, Tenn., and equipment will be installed as soon as the design of the machine is completed by Charles Wales, its inventor. It is expected that the plant will be completely equipped by Jan. 1.

The Cincinnati Fire Extinguisher Co., Cincinnati, recently incorporated with a capital of $50,000, has taken a long term lease on the buildings at 2070 Reading road and will manufacture sprinkling devices. Harley Dudley, formerly with the Cincinnati Fire Prevention Bureau, is one of those interested in the new company.

The Preston Woodworking Machinery Co., Ltd., Preston, Ont., advises that it purposes spending about $20,000 for machinery in the near future. This will include lathes, planers, shapers, milling machines, drills, gear cutters, etc. The president of the company is W. S. Hudson, managing director of the Canadian Office & School Furniture Co., Preston.

The Commonwealth Real Estate Trust Co., Pittsburgh, has awarded a contract to W. F. Trimble & Sons Co. for a two-story, fireproof building, 100 x 180 feet, to be erected in Liberty avenue, near Twenty-fifth street, Pittsburgh. This property has been leased to the Brown & Zortman Machinery Co. and the Pittsburgh Reinforced Brazing & Machinery Co., Pittsburgh, for a period of 10 years.

The Schacht Motor Car Co., of Cincinnati, O., has decided to establish a Canadian branch at Hamilton, Ont., and has purchased the old Tilden-Jackson factory on the corner of Sanford and Cumberland avenues. It is being fitted up with machinery of the most modern type at a cost of $350,000, and a spur is being built to connect with the Toronto, Hamilton & Buffalo railway. The capacity on starting will enable the company to employ 75 men, but it is intended to double the size of the plant in the spring. The officials of the Canadian branch company are: President, Thomas T. Rolph, Toronto; vice president, T. H. Schacht, Cincinnati; treasurer, Gerrard Muntz, Toronto; secretary and sales manager, J. S. Innes, Toronto.

Power Plant Equipment

Pocahontas, Ia., will vote on a bond issue of $14,000, the proceeds to be used in erecting an electric lighting plant.

The Texarkana Gas & Electric Co., Texarkana, Ark., is preparing to issue bonds to purchase new machinery and equipment.

The Holton Power Co., Holton, Cali., will increase its capital by $500,000 in order to provide funds for improvements.

From Lewiston, Id., reports are current that the Nez Perce Power & Light Co. is making preparations to invade that territory.

The Tulare Power Co., Porterville, Cali., will establish a power plant near Springville, and will erect an auxiliary plant in Porterville.

The Charleston Consolidated Railway & Light Co., Charlestown, S. C., will shortly install three new 1,000-kilowatt turbo-generators.

The Pacific Gas & Electric Co., San Francisco, is planning to erect a huge dam near Marysville, Cal., and will be in the market for about 500 tons of reinforcing bars. A large power plant is also to be built.

The Nashville Railway & Light Co., Nashville, Tenn., has purchased a site on First and Second avenues, that city, for an addition to its power plant.

A power plant will be erected at Sedro-Wooley, Wash., for the proposed Northern hospital. The state board of control, Olympia, is in charge of the contracts.

A boiler, 72x16, and two engines will be purchased for the power plant of the Livermore Chair Co., at Livermore, Ky. O. K. J. Meyer is president of the company.

Additional power equipment will probably be required by V. Neirmaier, of New Albany, Ind., for the operation of an ice factory, the erection of which he has in contemplation.

Bids will be received until Aug. 29 by Rollins & Westover, 531 Beals building, Kansas City, Mo., for the construction of an electric lighting plant, etc., at Monett, Mo.

Preston Hatcher, Jonesboro, Ark., is promoting a company for constructing an electric railway system. The Johnson Construction Co., of Memphis, Tenn., is outlining plans for the work.

The Nashville Armature Works, Nashville, Tenn., is in the market for a 150, 200 or 250-kilowatt, 60-cycle, 720 alternation, 2,300 to 6,600-volt generator; also a 500-volt, direct current, five-horsepower motor.

Announcement has been made that the Kentucky Traction & Terminal Co., Lexington, Ky., is ready to let contract for its new $500,000 power house at Lexington. Address Vice President F. W. Bacon.

The plant of the Johnson City Power Co., Johnson City, Tenn., is to be improved by the installation of a considerable amount of power equipment. A new boiler room is being built, and two new boilers are to be purchased.

The Oregon & Western Colonization Co., St. Paul, Minn., is pushing work on its irrigation project near Ontario, Ore., as rapidly as possible. It is estimated that the machinery needed by the company will cost about $20,000.

The board of public works, Honea Path, S. C., will receive bids until Sept. 5 for machinery, boilers, pumps, engines, etc., for an electric light plant and water works. Thomas W. Cothran, Greenwood, S. C., is consulting engineer.

Power equipment, involving units with a capacity of 120 horsepower, will be required by the Forest Products Chemical Co., Memphis, Tenn. James Lawrence is in charge of the

erection of the plant and the purchase of equipment.

A municipal lighting plant, to cost $200,000 is being considered at Bristol, Tenn. In order to secure the plant an enabling act providing for a bond issue would have to be put through the state legislature. Address Mayor L. H. Gammon.

Motors and other electric equipment will be required by C. C. Hinton, Evansville, Ind., who has decided to operate his sawmill at Bowling Green, Ky., now in course of erection, with electric power. J. Rowland Madison is in charge of the work.

The state board of control, Frankfort, Ky., has in view the construction of an electric railway, the estimated cost of which is $55,000, from Hopkinsville to the western asylum for the insane, two miles east. The power plant at the asylum will be considerably enlarged if the plan is decided upon.

The officials of the Winnemucca Light & Power Co., with headquarters in San Francisco, have announced that all arrangements have been completed for the enlargement of the plant at Winnemucca, Nev. The details of these plans require practically the entire reconstruction of the present system. New dynamos are to be installed at once.

Official announcement will be made before the close of the current month from the Spokane, Wash., offices of the Pacific Power & Light Co. of the company's plans to develop 1,000,000 horsepower by hydro-electric installation in the Columbia river, at Priest Rapids, Wash., southwest of Spokane, at a cost of from $8,000,000 to $10,000,000. It is estimated that eight years will be required to complete the project, which includes the construction of an enormous dam across the river at the foot of the rapids, the face of the dam to be 75 feet high.

Miscellaneous

C. J. Walton & Son, Louisville, have sold a 150-horsepower boiler to the Edw. L. Davis Lumber Co., Louisville.

The high school board of Knoxville, Tenn., has announced plans for the enlargement of the manual training department of the high school.

The Sunnybrook Distillery Co., of Louisville, has built a machine shop and ordered tools for its equipment. A Smith-Mills shaper and a Greaves-Klusman lathe were included.

The Brandeis Machinery & Supply Co., Louisville, has sold Ingersoll-Rand compressor outfits to the Peerless Mfg. Co., Louisville, and the Franklin Mining Co., of Marion, Ky.

The Westinghouse Machinery & Mfg. Co. is installing the machinery in the power plant of the Watauga Power Co., near Bristol, Tenn. The latter is completing a big hydro-electric project.

The Crocker-Wheeler Co., of Ampere, N. J., has been awarded the contract for the installation of a large part of the machinery in the water works and electric light plant of the city of Gallatin, Tenn.

The Henry Vogt Machine Co. will let a contract in the near future for a jolt-ramming machine with a capacity of several tons. It will be 60 x 72 inches. The company has not yet closed for the boiler plate roll which it inquired for several weeks ago.

The E. Keeler Co., Williamsport, Pa., through its Pittsburgh representative, reports the following sales: Two 115-horsepower, water tube boilers to drive compressors for the operation of lock gates on the government Ohio river dam No. 26; two 225-horsepower boilers to the city of Pittsburgh for municipal filtration plant; six 275-horsepower water tube boilers to the city of Pittsburgh to be installed with Waterford chain grate stokers made by the Rosedale Foundry & Machine Co., and Foster superheater and economizer for the Aspinwall pumping station, Pittsburgh.

Government News

The bureau of supplies and accounts, navy department, Washington, D. C., will open bids Sept. 5, for furnishing the following material for delivery at naval stations as indicated, and more fully described in the schedules numerated:

Balls, steel, linch, 1,600, Washington, 3870.
Bronze, rod, 1,000 pounds, Norfolk, 3872.
Copper, sheet, 500 pounds, Brooklyn, 3876.
Fittings, pipe, cast iron, miscellaneous, Philadelphia, 3869.
Pipe, cast iron, miscellaneous, Philadelphia, 3869.
Ranges and ovens, electric, miscellaneous, Brooklyn, 3872.
Shells, tube, 32,700 pounds, Washington, 3871.
Steel, billet, 7,900 pounds, Brooklyn, 3872.
Valves, brass, 380, Brooklyn, 3876.
Rivets, steel, miscellaneous, Washington, 3870.
Shovels, scoop, 800, Norfolk, 3876.
Rails, steel, 26, tons, Newport, 3870.
Rails, steel, miscellaneous, Washington, 3870.
Spikes and bolts, steel, miscellaneous, Newport, 3870.
Railroad switches, miscellaneous, Newport, 3870.
Supplies, railroad, miscellaneous, Washington, 3870.

Opening Sept. 12.

Furnishing and installing turn-table for railroad, Washington, 3852.
Press, power, 500-ton, 1, Washington, 3853.
Winch and capstan, 1, Brooklyn, 3855.

Opening Sept. 19.

Blades, hacksaw, 300 dozen, Puget Sound, 3861.
Buckets, galvanized, iron or steel, 400, Puget Sound, 3861.
Blocks, direct differential, 26, Mare Island, 3861.
Drill, bench, upright, 3, Mare Island, 3863.
Drills, twist, high speed, miscellaneous, Mare Island, 3863.
Drills, straight flute, miscellaneous, Mare Island, 3863.
Files, miscellaneous, Puget Sound, 3861.
Files, miscellaneous, Mare Island, 3861.
Nuts, brass, miscellaneous, Mare Island, 3861.
Spare parts for stake holder and stakes, miscellaneous, Mare Island, 3861.
Taps and dies, miscellaneous, Puget Sound, 3861.
Brass, naval, 3,800 pounds Puget Sound, 3864.
Brass, rod, 16,100 pounds, Mare Island, 3864.
Brass, sheet, miscellaneous, Puget Sound, 3864.
Brass, sheet, 1,330 pounds, Mare Island, 3864.
Copper, sheathing, 1,000 pounds, Mare Island, 3860.
Copper, sheet, 2,750 pounds, Mare Island, 3864.
Steel angles, black, miscellaneous, Puget Sound, 3860.
Steel angles, galvanized, 4,900 pounds, Mare get Sound, 3860.
Steel, bar, medium, 77,500 pounds, Mare Island, 3860.
Steel, billets and blooms, 61,000 pounds, Mare Island, 3867.
Steel, floor plates, 75,000 pounds, Mare Island, 3867.
Steel, floor plates, 14,600 pounds, Puget Sound, 3867.
Steel sheet, galvanized, 41,000, Mare Island, 3860.
Steel, sheet, black, 3,500 pounds, Mare Island, 3860.
Zinc, sheet, 5,000 pounds, Puget Sound, 3867.
Zinc, sheet, 1,250 pounds, Puget Sound, 3860.
Cocks, bibb, 216, Mare Island, 3865.
Fittings, pipe, composition, miscellaneous, Mare Island, 3865.
Fittings, pipe, iron, miscellaneous, Mare Island, 3865.
Pipe, brass, 25,000 pounds, Puget Sound, 3864.
Tubing, copper, miscellaneous, Puget Sound, 3864.
Unions, composition, miscellaneous, Mare Island, 3865.
Valves, composition, miscellaneous, Mare Island, 3865.

Bids will be opened at the Isthmian canal commission at 10:30 a. m., on Sept. 1, for furnishing and delivering at the Isthmus a large quantity of mechanical bond steel bars. These bars to be so-called deformed bar, cold twisted or any other standard type, to be made by the open-hearth process and to be in accordance with the standard specifications as adopted by the Association of American Steel Manufacturers in 1910 for concrete reinforcement bars hard grade. For further information, address the purchasing officer of the commission at Washington, D. C. This opening will be under circular 644.

Bids will be opened at the United States torpedo depot, Fort Totten, N. Y., Aug. 28, at 10 a. m. for furnishing 4,500 steel castings, 1½ pounds each, for aprons for mine domes. Bidders will be required to state how soon after receipt of order delivery can be made. For further information address the commanding officer at Fort Totten.

A requisition has been made for the following materials for use on the re-location of the Panama railroad: Two thousand gross tons of 90-pound

open-hearth steel rail; 8,000 pairs of 4-hole slice bars; 1,000 extra special track bolts; 160,000 "Economy" No. 9 rolled steel, 4-hole tie plates; 400,000 screw spikes, 5 inches long under flange and ⅞ inch diameter; 8,000 special joint tie plates; 17,000 special joint screw spikes, 5 15-16 inches long.

The contract for furnishing and delivering cranes at the Isthmus, bids for which were opened July 31, under Canal Circular 636-A, has been awarded the Industrial Works, of Bay City, Mich., at $17,000.

The following award was made by the Isthmian canal comimssion, Washington, D. C., for furnishing and delivering steel castings for repairs to Buckeye shovels: Titan Steel Casting Co., Newark, N. J., for frames, 0.03¾; hooks, 0.04¼; blocks, 0.04¼. These bids were opened Aug. 7.

The contract for furnishing 55,200 pounds of boat spikes, bids for which were opened by the purchasing officer of the Isthmian canal commission, at Washington, has been awarded to Manning, Maxwell & Moore, of New York, at $1,446.24.

The Champion Iron Works, of Canton, O., has been awarded the contract for furnishing and installing cast iron stairway, elevator door sills, etc., in the hospital buildings at the United States penitentiary, Atlanta, Ga., at $1,336, and for the Leavenworth penitentiary $1,325.

The secretary of the interior has awarded the contract for furnishing three cableways for use in the construction of Engle dam, Rio Grande irrigation project, New Mexico, to the Lidgerwood Mfg. Co., of New York at $44,160. These cableways each have a span of 1,420 feet and are to be operated by electricity. Each cableway will operate a 3-yard Andreson-Evans grab bucket, or its equivalent, representing an average load of 10 to 11 tons when filled with sand, or an average load of concrete of 8 tons, operating with aerial dumping device.

Bids were opened at the bureau of supplies and accounts, navy department, Washington, D. C., on Aug. 15, for furnishing supplies and materials for various navy yards as follows:

ELECTRICALLY DRIVEN DRAFT BLOWERS—Schedule 3800, Class 11, Brooklyn, 14 electrically driven forced draft blowers of the multi-vane centrifugal, cased for the U. S. S. New York: General Electric Co., Schenectady, N. Y., $34,000; Newport News Ship Building & Dry Dock Co., Newport News, Va., $31,738.

Bids were opened at the bureau of yards and docks, navy department, Washington, D. C., for furnishing switchboard feeder panels for the United States navy yard, Boston, Aug. 19, as follows:

Taunton New Bedford Copper Co., New Bedford, Mass., $5,287; Blake Electric Co., Boston, $4,083; Youngstown Armature & Construction Co., Youngstown, O., $4,800; General Electric Co., Schenectady, N. Y., $3,470; National Electrical Supply Co., Washington, D. C., $5,380 alternate $4,685; Walker Electric Mfg. Co., Washington, D. C., $4,591; Westinghouse Electric Mfg. Co., Washington, D. C., $4,070; and on Item 2, $4,200; alternate $4,165.

The following awards have been made by the bureau of supplies and accounts, navy department, Washington, D. C., for furnishing materials and supplies to be delivered to the various navy yards in the United States.

Opening July 11.

Schedule 3719, Class 61, Brooklyn, one welding plant: Davis Bournonville Co., N. Y., $4,500.

ENGINE LATHE—Schedule 3717, Class 51, Hingham, 1 engine lathe: Fairbanks Co., Washington, D. C., $1,067.

DRILL—Schedule 3718, Class 52, Hingham, 1 motor driven plain radial drill: Fairbanks Co., Washington, D. C., $817.

SHAPER—Schedule 3718, Class 53, Hingham, 1 motor driven shaper: Fairbanks Co., Washington, D. C., $787.

SENSITIVE DRILL—Schedule 3718, Class 54. Hingham, 1 medium sensitive drill: The Griscom Spencer Co., New York, $167.

SPEED LATHE—Schedule 3718, Class 55, Hingham, 1 motor driven speed lathe: Fairbanks Co., Washington $227.

EMERY GRINDER—Schedule 3718, Class 56, Hingham, 1 emery grinder: Fairbanks Co., Washington, $117.

Opening July 25.

Schedule 3735, Class 97, Boston, 26,000 pounds crucible cast steel wire: John A. Roebling's Sons, N. Y., $2,187.50.

Schedule 3735, Class 101, Brooklyn, 100 dozen galvanized iron buckets: E. A. Gimbel, Philadelphia, $450.50.

Schedule 3735, Class 104, Brooklyn, 1,525 pounds steel bolts and nuts: E. F. Kirwan & Co., Baltimore, $115.

Schedule 3739, Class 124, Brooklyn, 990 pounds brass bolts and nuts: R. B. Sherman, New York, $320.

Schedule 3739, Class 125, Brooklyn, 3,500 pounds rolled naval brass rod: Ansonia Brass & Copper Co., New York, $486.85.

Schedule 3739, Class 126, Brooklyn, 8,440 pounds seamless drawn copper tubing: National Brass & Copper Tube Co., New York, $1,781.28.

Schedule 3740, Class 127, Brooklyn,6 shaper vises: Manning, Maxwell & Moore, New York, $87.50.

Schedule 3740, Class 129, Philadelphia, 1 steel oil tank: Standard Boiler & Plate Iron Co., $320.

Schedule 3743, Class 136, Washington, 76,000 pounds hot rolled or forged steel: E. F. Kirwan & Co., Baltimore $2,375.

Schedule 3763, Class 192, Charleston, 72,000 pounds medium black steel angles: J. B. Kendall Co., Washington, $1,238.40.

Schedule 3763, Class 193, Brooklyn, miscellaneous wrought iron or mild steel pipe: E. F. Keating Co., New York, $1,024.76.

SAND SHAKERS—Schedule 3748, Class 22, Norfolk, 3 sand shakers: J. W. Paxson Co., Philadelphia, $148.50.

CORE MAKING MACHINE—Schedule 3748, Class 23, Norfolk, 1 core making machine: Wadsworth Core Machine & Equipment Co., Akron, O., $144.

Class 2, schedule 3748, centrifugal sand making machine, to be delivered at Norfolk, has been rejected and supplemental bids will be called for on Aug. 30.

STEEL PLATES—Schedule 3763, Class 191, Charleston, 11,500 pounds medium black steel plates: Worth Bros. Co., Washington, $203.38.

Opening Aug. 1.

Schedule 3744, Class 7, Mare Island, 1,250 pounds round naval bronze: U. T. Hungerford Brass & Copper Co., New York, $202.50.

Schedule 3745, Class 13, Mare Island, miscellaneous hardware. Baker & Hamilton, San Francisco, $1,456.85.

Schedule 3746, Class 21, Mare Island, 2,600 pounds commercial brass rod: National Brass & Copper Tube Co., New York, $374.

Schedule 3746, Class 22, Mare Island, 4,000 pounds phosphor bronze: Nassau Smelting & Refining Works, New York, $658.40.

Schedule 3746, Class 23, Puget Sound, 40 tons pig iron: Balfour Guthrie & Co., Seattle, $580.

Schedule 3746, Class 24, Puget Sound, 5,630 pounds brass voice tubing: National Brass & Copper Tube Co., New York, $1,014.35.

Schedule 3773, Class 91, Brooklyn, 5 steam jacketed copper kettles E. F. Kirwan & Co., Baltimore, $950.

Schedule 3774, Class 98, Brooklyn, 32,950 pounds medium steel plate: J. E. Kendall Co., Washington, $720.72.

Schedule 3774, Class 98½, Brooklyn, 24,100 pounds medium steel plates: Worth Bros., Coatesville, Pa., $388.01.

Schedule 3774, Class 99, Brooklyn, 5,400 pounds medium steel I beams: J. B. Kendall Co., Washington $0.0169.

Schedule 3774, Class 100, Brooklyn, 7,000 pounds medium bronze plates: Taunton New Bedford Copper Co., New Bedford, Mass., $1,116.50.

Schedule 3774, Class 101, Norfolk, 7,255 pounds lead pipe for lining steel tubing: James Robertson Lead Co., Baltimore, $538.31.

Schedule 3774, Class 102, Norfolk, 3,750 pounds lead pipe on reels on lengths of about 50 feet: James Robertson Lead Co., Baltimore, $270.87.

Schedule 3775, Class 104, Brooklyn, 1,260 Morse taper shank twist drills: J. B. Kendall Co., Washington, $186.

Schedule 3775, Class 107, Brooklyn, 13 worm geared chain blocks: R. W. Geldart, N. Y., $222.70.

Schedule 3775, Class 111, Brooklyn, 709 gross bright finished wood screws: Manhattan Supply Co., New York, $476.54.

Schedule 3776, Class 121, Philadelphia, 1,500 pounds rolled naval brass: Ansonia Brass & Copper Co., New York, $209.25.

Schedule 3776, Class 122, Brooklyn, 5,000 pounds sheet brass: Taunton New Bedford Copper Co., New Bedford, Mass., $1,127.40.

Schedule 3776, Class 123, Brooklyn, 2,500 pounds medium steel plates: Worth Bros., Coatesville, Pa., $44.

Schedule 3776, Class 129, Brooklyn, 65 plumbago crucibles: J. Bartley Crucible Co., Trenton, N. J., $227.20.

Opening Aug. 8.

Schedule 3781, Class 32, Brooklyn, 2,000 feet insulated cable: Standard Underground Cable Co., Pittsburgh, $1,568.

Schedule 3785, Class 61, Brooklyn, 25,500 pounds medium steel bar. Crucible Steel Co., Pittsburgh, $494.45.

Schedule 3785, Class 62, Philadelphia, 1,500 pounds half and half solder: Nassau Smelting & Refining Works, New York, $352.05.

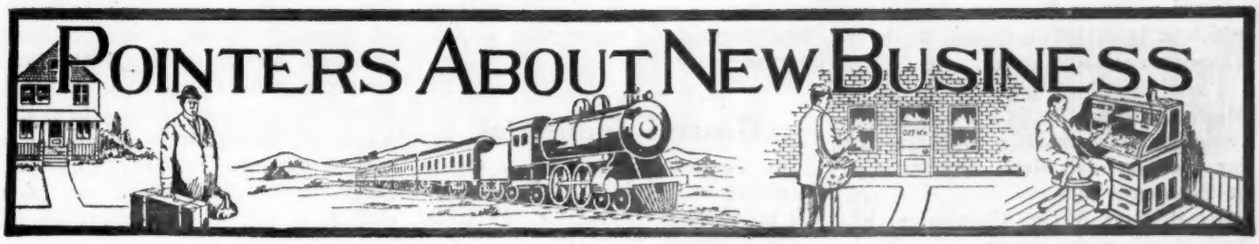
Schedule 3787, Class 81, Boston, 4,500 pounds brass pipe: National Brass & Copper Tube Co., New York, $738.

Schedule 3787, Class 83, Portsmouth, 8,220 pounds seamless copper pipe: National Brass & Copper Tube Co., New York, $1,618.59.

Official announcement is made by Allis-Chalmers Co. that the Scranton, Pa., plant will gradually be closed out and finally closed down Jan. 1. The hydraulic department will be removed to New York, and the sugar machinery department to Chicago.

The Stevenson Co., of Pittsburgh, has been chartered to manufacture machinery with capital of $6,000, the incorporators being Malcolm R. Stevenson, McKeesport, Pa.; Donald C. and W. P. Stevenson, both of Pittsburgh.

The Eastern Range Boiler & Welding Co., Conshohocken, Pa., which was recently incorporated, states that it will manufacture galvanized range boilers and special tank work by the welding process.



(In order to assist the post office in delivering letters to new concerns, it is suggested that the names of incorporators be written in the lower left hand part of every envelope addressed to such new companies.)

New Buyers

The following manufacturing companies have filed articles of incorporation:

The Farm Implement Co., Norfolk, Va.; $25,000; by President W. E. Land.

The Hoblit Nut-Lock Co., Dayton, O.; $10,000; by B. F. Hoblit and others.

The Imperial Machinery Co., Cincinnati; $50,000; by John W. Daly and others.

The Chillicothe Iron Co., Chillicothe, Mo.; $8,000; by W. H. Ellett, A. B. MacDonald, C. L. Waite and others.

The Lorain Metal Products Co., Lorain, O.; $30,000; by F. J. Stack, L. C. Lorenz, E. J. Maple, E. J. Bryant and L. R. Clawson.

The Climax Nutlock & Bolt Mfg. Co., Cleveland; $15,000; by C. L. Dunham, V. C. Walker, S. Dunham, E. Witkofsky and J. S. Walker.

The Carbon Steel Co., Pittsburgh, Pa.; $5,000; by C. Alvin Jones and Fred C. Strobert, Pittsburgh, and Boyd P. Ewing, Wilkinsburg, Pa.

The Globe Machine Co., Louisville, Ky.; $5,000; to manufacture machinery; by Andrew B. Jutt, Richard H. Dietzman and Albert S. Dietzman.

The Stevenson Co., Pittsburgh; $6,000; to manufacture machinery; by Malcolm R. Stevenson, McKeesport, Pa.; Donald C. and W. P. Stevenson, Pittsburgh.

The Alloy Steel Casting Co., Wheeling, W. Va.; $100,000; by W. M. Carr, Peebles Tatum, A. S. List, J. L. Bayha and S. M. Noyes, all of Wheeling, W. Va.

The Wire Fabric Machinery Co., Kansas City, Mo.; $2,000; to manufacture wire fabric machinery; by Fred C. Willitts, August M. Hucks and Humphrey E. Howell.

The Tuna Iron & Steel Works, F. Hamilton Co., Inc., Bradford, Pa.; $50,000; by Treasurer L. W. Barton, Bradford, Pa.; J. W. Algeo, H. V. Harris, Providence, R. I.; Frank Hamilton, Breuil Hamilton and J. H. Rose, all of Bradford, Pa.

The Roberts Foundry Co., Indianapolis; $10,000; to manufacture and sell machinery and do a foundry business; by Emerson Davis, W. H. Roberts and Elmer Wetzel.

The Journal Box Lifting Co., Pittsburgh; $5,000; to manufacture iron or steel jacks, journal box lifting apparatus and tools and machinery; by Treasurer A. R. Bassett, Pittsburgh.

The Indiana Steel & Iron Co., Linton, Ind.; $100,000; by William J. Hamilton, Linton, Ind., and Marcus K. Frank, J. D. Karasik, A. A. Granville and S. R. Sobel, all of Pittsburgh.

The Interstate Pattern Co., Cleveland; $10,000; to manufacture paterns, dies and carvings; by Albert R. Roethlisberger, H. G. Arthur, H. E. Pratt, F. J. Hurlinden and D. D. Grigor.

The Gibbs Gas Engine Co., Jacksonville, Fla.; $5,000; to manufacture gas engines; by President George W. Gibbs, Jr., Vice President John D. Weed, and Secretary-Treasurer H. W. Mizell.

Wannenwetch & Co., Buffalo; $100,000; to manufacture and deal in machinery, rendering and disposal plants, etc.; by Albert C. Lemble, Emma A. Lemble and Rudolph T. G. Lesenger, all of Buffalo.

The Excelsior Co., Manhattan, New York City; $500,000; to manufacture valve and plumbing supplies; by Irving B. Wood, 25 West Forty-second street; Louis Sternfield and William D. Cushman, 11 Pine street, all of New York City.

The General Dehydrator Co., New York City; $1,200,000; to manufacture and deal in evaporating machinery; by Walter J. Lee, 114 Liberty street, Charles B. Van Nostrand, 36 Wall street, and Austin M. Poole, 36 Wall street, all of New York City.

The American Steel Tie Co., Salt Lake City, Utah; $1,000,000; to make steel ties with rail fixtures for use without bolts or spikes of any kind; by President Joseph R. Murdock, Vice President John T. Clark, Secretary and Treasurer J. W. Musser.

The National Tin Co., Elizabeth, N. J.; $300,000; to reclaim steel, tin, solder, tin scrap, etc.; by Leo Montel, 95 Liberty street, New York City; Albert E. Snow, 340 East Nineteenth street, Brooklyn, and William R. Wilson, 207 Broad street, Elizabeth, N. J.

The Rotary Pump Transmission Co., New York City; $200,000; to manufacture and deal in pumps and transmission systems; by Copeland Townsend, 1254 Broadway; Charles R. Hoffman, 103 Park avenue; George A. Burkhard, 385 East 157th street, all of New York City.

The McCue Co., Buffalo; $700,000; to manufacture electric, gasoline and steam vehicles; by J. Willard Lansing, Buffalo; Ira T. Gleason, Buffalo; Bert H. Bean, Buffalo; Charles T. McCue, Hartford, Conn.; Henry A. Kamman, Buffalo.

The Dakota Engineering & Supply Co., Manhattan, New York City; $10,000; to manufacture engineering tools and supplies; by Simon Mohrbach, 87 Hamilton place; Daniel O'Connell, 323 East Ninety-third street, and James A. Lynch, 333 West Eighty-seventh street, all of New York City.

The General Railway & Motor Safety Appliance Co., Manhattan, New York City; $50,000; by William B. Sorsby, 59 West Forty-sixth street, New York City; Hattie Kasberg, 450 South Fifth street, Mount Vernon, N. Y.; J. Douglas Wetmore, West 111th street, New York City.

The International Harrow Co., Birmingham, Ala.; $500,000; to manufacture a patented steel harrow; by president, Schuyler H. Floyd; vice president, George A. Neal; secretary, R. D. Johnston; treasurer, John L. Parker. The company has purchased the North Birmingham Drop Forge Co.'s plant and will install machinery.

New Construction

The Chain Belt Co., Milwaukee, Wis., will erect a machine shop, two stories, 84 x 209 feet, estimated to cost $25,000.

The Converse Bridge Co., Ridgedale, Tenn., will rebuild its plant, which was recently destroyed by fire, at a loss of $25,000.

R. H. Finnicune, of Pittsburgh, has

secured a site at Houston, Tex., upon which it is said he proposes to build a one-story boiler shop.

Plans have been prepared by R. B. McDanel, New Brighton, Pa., for a two-story office building to be erected for the National Metal Molding Co., at Economy, Pa.

E. M. Burr & Co., Champaign, Ill., are planning to construct a larger foundry in the fall or spring, the present foundry being inadequate to care for the growing business.

The Southern Steel Products Co., Dallas, Tex., has had plans drawn for the erection of a fireproof building 40 x 100 feet, in which it will install machinery for manufacturing steel sash and other metal products.

The large warehouse planned for the New Jersey Zinc Co., at Franklin Furnace, N. J., is now under construction. When completed it will be one of the most modern structures of its kind in the east. The estimated cost is $60,000.

The Grafton Foundry Co., Grafton, Wis., whose plant was recently damaged by fire, advises that it will rebuild at once. The new structure will be of steel and cement, 72 x 120 feet. It will need tumbling barrels, grinders, blower and all kinds of foundry tools.

The American Stove Co. has purchased a site alongside the tracks of the C. & P. railroad, at Perkins avenue, Cleveland. It will erect a number of buildings, which will be used as warehouses by the company in Cleveland. A two-story building will be constructed at once.

The Emmert Mfg. Co., Waynesboro, Pa., manufacturer of patternmakers' and woodworkers' risers, etc., will erect a 40 x 45-foot addition to its foundry and an air compressor plant will be installed. Pneumatic chippers and other cleaning equipment will also be added to the cleaning department.

The A & H Foundry Co., West Hamburg, Pa., is having plans prepared for a new foundry of brick construction. The cost will approximate $10,000. Edgar Amole and Frank Harpel are proprietors of this plant. Mr. Amole was formerly associated with the Reading Stove Works, Reading, Pa.

The Root & Van Dervoort Engineering Co., East Moline, Ill., has let contracts for the erection of three additional buildings to its plant, which for the second time this year will double its capacity. These buildings include: An assembling room, one-story, brick, 85 x 258 feet; testing and painting building, one-story, 70 x 375 feet; and a storage shed, one-story, 70 x 80 feet. Construction will be commenced at once.

General Industrial

The Courier Car Co., Dayton, O., has decreased its capital stock from $200,000 to $500.

The Central Malleable Iron Co., Decatur, Ill., has changed its name to the Decatur Foundry Co.

The Marshall-Clark Motor Car Co., Louisville, Ky., has changed its name to the Clark Motor Car Co.

The Safety Cylinder Valve Co., Mansfield, O., has increased its capital stock from $100,000 to $125,000.

The Upland Foundry & Machine Shop has been established by Emeil Koenig, who formerly conducted a foundry at Uplands, Cal. Additional machinery will be installed at once.

The Llewllyn Iron Works, of Los Angeles, Cal., announces that it has no intention at the present time of establishing a branch plant in either Seattle or Portland, as has been reported in the daily press.

The E. & G. Brooke Iron Co., Birdsboro, Pa., is planning to operate iron ore mines at St. Peter's, Chester county, Pa. A new shaft will be sunk north of the old one which has not been operated for some time.

The Maryland Steel Co. has practically completed the modernizing of its blast furnace at Sparrows Point by equipping the stack with an up to date skip hoist and other improvements. The capacity of the stack has not been changed. The remodeled furnace will be blown in within a few days and one of the present active stacks will then be put out, leaving three of the four furnaces in operation.

The Cincinnati Fire Extinguisher Co., Cincinnati, has been incorporated with a capital of $50,000, by Harley Duley, Thomas J. Dyer, Frank G. Jones, and H. C. Hazen. The company has secured a long term lease on the buildings at 2070 Reading road, and will manufacture automatic sprinkling equipment devices, which have been approved by fire underwriters in this country and Canada. Mr. Dudley has resigned his connection with the Cincinnati Fire Prevention Bureau to become identified with the new company.

Following the filing of a petition by the Commercial Bank & Trust Co., for the Continental National Bank against the Joan D'Arc Mfg. Co., who has been operating the brass plant formerly used by the Howe Mfg. Co., which went into bankruptcy, the circuit court appointed Hugh B. Fleece receiver of the Joan D'Arc company. The plant is not in operation, the machinery having been dismantled. The petition of the bank alleged that the company still owed $5,000 on the plant, which was taken over at a sale of the effects of the bankrupt Howe company.

The Brightman Mfg. Co., whose plant at Shelby, O., was practically destroyed by fire on Dec. 19, 1910, announces that it has completed its new plant at Columbus, O., and will immediately resume the manufacture of turned and polished shafting, screw stock and drawn samples. The new plant has been built to conform to the most modern principles of design and it is equipped with all modern machine tools, including its own patented machinery. Each department of the plant will be under the direct supervision of a member of the company.

The Holmes & Morris Mfg. Co., 402 South Franklin street, Syracuse, N. Y., which was recently incorporated, advises that it has taken over the Precision Mfg. Co. of the same address, of which concern F. R. Holmes was sole owner. The purpose of the new corporation is to increase the business along similar lines followed by the Precision company, and also to manufacture certain specialties. Particular attention will be paid, however, at all times to its main line of business, die casting, in which it has done some very creditable work. At the present time, no building is contemplated, and its equipment for the present is complete.

Trade Notes

Denton & Flagg have been made direct representatives of the United States Ball Bearing Mfg. Co., of Oak Park, Ill., which manufactures a full line of radial and thrust bearings. They will handle this account in connection with the Ohio Seamless Tube Co.'s steel tubing, and the Cumberland Steel Co.'s ground shafting.

Fires

The screwdriver and spring works of the Tuck Mfg. Co., Brockton, Mass., were damaged Aug. 16, the fire resulting from a gasoline explosion. The loss is estimated at $15,000.

Part of the power and electric light plant equipment of the Wabash railroad machine shops at Moberly, Mo., was badly damaged on Aug. 10 by fire which broke out in the engine room.